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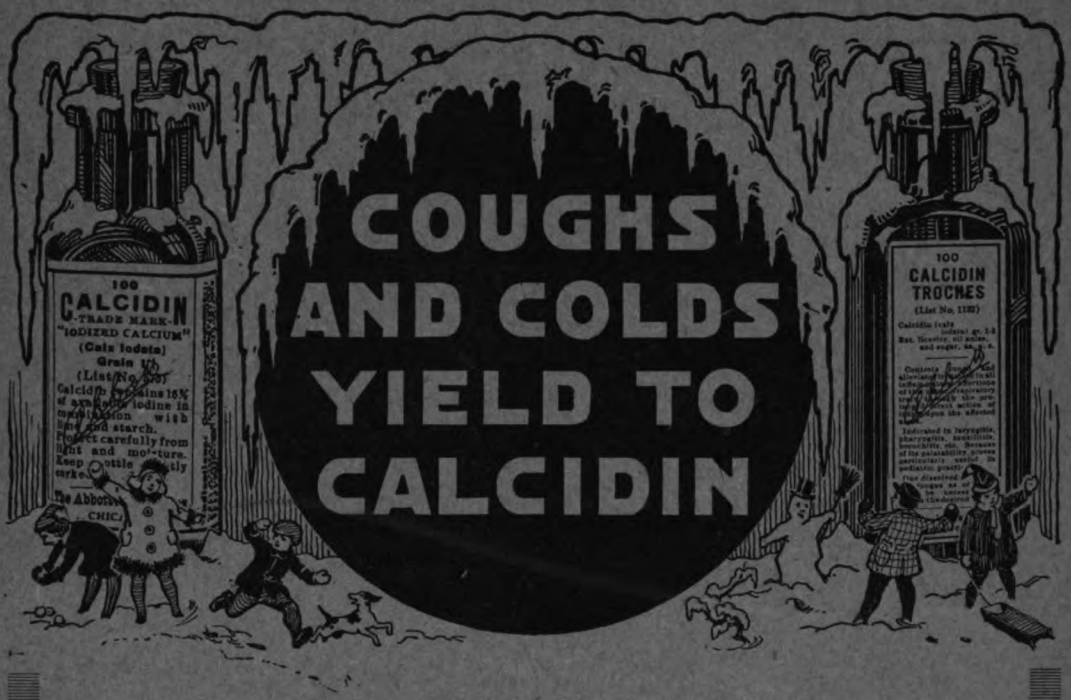


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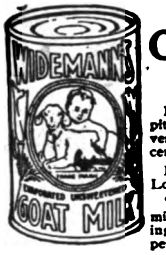


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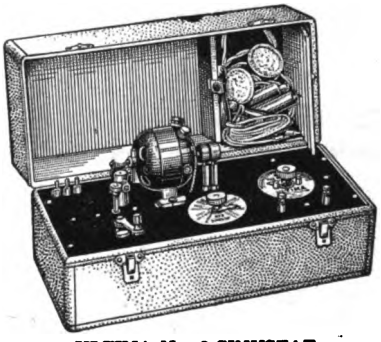

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Western Medical Times

VOL. XXXIX DENVER, COLO., OCTOBER, 1919 No. 4

# The Value of the "No Good"—Paronychia.

THIRTY-SEVENTH PAPER

DOUGLAS H. STEWART, M.D., F.A.C.S.,
New York City

Stedman's Dictionary gives this definition: "(G. *para,* beside+*onyx* (*onych*) nail.) Felon, panris, whitlow; inflammation of the structures in the distal phalanx of the finger, either those surrounding the nail or the bone itself."

The several names that are mentioned in the aforesaid description, together with some others, such as paronchia tendenosa, paronchia osseos, are not at all different diseases, nor are they infection by different germs, but they are well known streptococcus, staphylococcus mixtures attacking anatomical structures of different or various areas. Hence the variations of appearances, damages, etc. In other words, it is not the invader, but it is the part invaded that gives rise to effects that are so different as to bear different names, even though all such infections and inflammations are all caused by about the same germ group, any difference in clinical manifestations is due to the location of the injury or puncture that furnished the portal of entry to the economy.

Owing perhaps to the protection that is afforded to the foot by the heavy shoe, the toes are rather less likely to be affected than are the fingers, though in localities where people go bare-footed an affected toe would hardly cause comment. As a clinical fact, the foot is so used to a sort of germ poultice or to germs well rubbed in and incubated in the protecting skin, that the foot would seem to have every opportunity to acquire immunity, or at least to obtain a high resisting power, if that power could be obtained through vaccination or constant exposure. The foot is so germ soaked that it is a very much easier task to sterilize the hand than the foot, for to obtain a primary union of a wound or the foot, near its tread or shoe contact, is a very difficult matter, indeed. While there are exceptions, of course, yet it is a fair comment that the foot will endure far more damage, infection, displacement, etc., with much less rebellion or protest than is the case with the hand, though perhaps, in a patient with paronychia, coupled with an overlying diabetes, the exact contrary would appear to hold true.

Perhaps the greatest single cause of paronychia usually is the stick or puncture of a needle. Among seamstresses this commonly implies an involvement of the index or of the middle finger. With the surgeon it is the thumb of the left hand that is wounded. There may be small warrant for comforting a patient along any such lines, for though it is admitted as true that there is no direct connection of the synovial sheaths of the index and middle fingers with either of the palmar lacunae, that do connect with the thumb and the little finger, so that though paronychia of that thumb or little finger is rather rare, yet when it does occur, abcesses are liable to form on the forearm, because of a direct extension, yet only too often an in-

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fection of the index or middle finger, while it is apparently healed up or blocked for a day or two, will, if allowed to take its course, infect a palmar lacuna, even though the extension be not along contiguous sheats. Or to state it differently, even admitting the actual presence of a barrier, yet clinical experience will show that that barrier may be overleaped with very unfortunate consequences.

From what has been stated it follows that a first question to be solved about any acute inflammation involving any part of a distal phalanx is, is it syphilitic, tubercular or focal. A good second question is, is it superficial or deep, or both. After one has seen a few friends develop an initial lesion upon a little bit of a hangnail, or has seen patients lose the whole ungual phalanx as a sequel to a neglected or untreated "run around," why of course such an observer becomes just a little bit appreciative of what picayune injury may bring to pass in the way of permanent and terminal damage.

In the syphilitic form, one should hunt for palmar or plantar syphilides, and presence of these, together with the fact that there are apt to be several fingers or toes affected at the same time, and the further consideration that the patient is apt to be a child, while the true septic is most commonly found in the adult of the work shop or of the sewing trade. The tubercular form is not apt to appear on the distal phalanx. Other points of diagnosis may be found in any textbook.

If the present law of safety first is to be lived up to, then no matter how slight the condition may appear, if there is the least tension, then that tension should be given an outlet through an incision, for in this instance, at least, if pus is penned up it will find its way into the cellular tissue below it. And it is well for all parties concerned if the reader bears in mind that paronychia seems infection, as it has rather a large death rate. This death rate may be direct or indirect, what matter though it be called septicemia, pyemia, neuritis or endarteritis. The point here emphasized is, that it is not at all conducive to ones peace of mind or to his reputation to learn that some patient, who was dismissed from ones office once upon a time and following dismissal was almost forgotten, even supposing that patient did receive a little dab of iodine for form's sake, yet that patient has passed to the Great Beyond from the consequences of his no account hangnail. But too often the doctor is deceived by a little superficial collection of pus that may or may not appear to need urgent treatment, but it does serve to distract attention from a second, a much more serious and deep seated condition that is overlooked. It follows that no matter what one sees upon one side of a finger, it behooves him to carefully explore the other side and all sides, until one can prove that conditions are approximately safe on the supposedly healthy side. In the writer's experience it is not at all rare to find a paronychia ungualis at the same time as a paronychia cellulosa. One affecting the skin about the nail upon the dorsum and the other burrowing into the cellular tissue of the pulp upon palmar side. It may also be just as well to bear in mind that a felon, when neglected, can hardly be considered evidence, because of its local damage, that it has not given rise to pain in some distant bone layer, that the X-ray man may call osteomyelitis, derived or transmitted from the seat or focus at the original injury.

As to the matter of treatment, any patient suffering from paronychia needs either mercury or iron, or both combined, internally. Locally, the writer uses an application of his own biniodide solution (this contains one grain of calomel in two ounces each of tincture iodine, of glycerine and of alcohol). When this application dries, which will be in a few minutes, then the infected part is bandaged or wrapped up in a salve containing equal parts of extract belladonna and glyceritum acidi tannici.

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This is covered properly and the whole finger is splinted as though fractured, employing a wooden tongue depressor for the purpose. It has been said that the splint is the most important part of the whole dressing. It is fairly certain that the absolute rest, conferred by splinting, is invaluable as a measure in any sort of abortive treatment. It is wonderful how many paronychias can be made to stop or can be arrested by this simple means, but if there is any throbbing or any tension, the unfailing rule is to employ the usual surgical procedure of incision. There seem to be several ways of performing this little operation, of which at least two are good. One is to make a longitudinal gash parallel with the long axis of the part; the other is to make a single gash parallel with the short axis of the same part. Of course, any such gash, made more or less accurately as to proper placement, can hardly be compared, as to result, with a careful, rather slow dissection, carried clear to the bone or through the periosteum, if necessary, or even involving the boring of a hole straight through the bone. for the purpose of draining an infected medullary cavity. If an anesthetist with nitrous oxide is at hand, his presence and employment make everything very easy. But if he is not available for any reason then the expedient known as nerve blocking is invaluable as a means of local anesthesia. One very neat and sure way of accomplishing capital anesthesia is to take two solutions and plenty of time, for time spent upon local anesthesia very often will prove to be a great economy of time later in the operation. The first solution is a half grain of novocaine in a dram of boiled water, the second solution is two grains of quinine and urea hydrochloride in the same quantity of water and a picture of semblance of a finger ring ⅜-inch wide is painted round the finger, but on second, uninflamed skin, ½-inch or more, proximal to the inflamed area. Using something like the well known Schleich's method, introducing along the proximal margin of the iodine ring the novocaine solution, keeping your circle of drops or beads as superficially as possible. After completion of this entire circle round the finger, make a second, similar circle, as deep as possible, along the distal margin of that iodine ring. Then, using the quinine solution, reverse the process, or inject the lower margin as deeply as possible and the distal margin as superficially as may be done. When properly done, a most complete and capital anesthesia is obtained. By this is meant an anesthesia sufficient for any manipulation whatever. Haste and carelessness are the two things that will spoil the whole procedure. Ordinary or careless nerve blocking often fails to influence some irregular or unusual nerve filament which, escaping the action of the anesthetic, makes all sorts of that kind of trouble known as failure. Why should the surgeon take any chances to save less than five minutes of time and cause much unnecessary suffering, while, by the very fact of his haste, he may not bring about the end he seeks. A strip of adhesive plaster or a rubber band may be used to block the veinous return and so prevent absorption by the body at large. Hypothetically, this is good practice; clinically, the writer has done it and left it undone and can find no difference in the result. This, he thinks, is due to the fact that the free bleeding drains the drug out, if there is any excess, over its local action. It is the same with adrenalin, it is good, whether used or not. The writer uses it because the tablets seem to contain it, but if a solution is made by the druggist, *de novo*, he never thinks of ordering it to be put in. A small drop of phenol or a little frozen tissue at the site of the original introduction of the hypodermic needle will make the whole procedure painless. As to the incision, it is one simple line, cut crossing to the longitudinal axis of the bone, is the usual procedure. If carried through the periosteum it gives the well known results. The other method

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is to hold the knife tranversely to the long axis and so cut as close to the palmar surface of the bone as possible, making something that might be compared to an alligator's mouth, on profile view. This gives capital drainage and while it makes two scars, one upon each side of the finger, yet those scars are in rather thin skin, so that, at the end of two years, they are rather difficult to find. The curious way in which fibers of the dorsum run longitudinally and those of the palmar surface run perpendicularly, is mentioned, with other details, in the various text-books on surgery, and account for the way that pus acts in the two situations. But when that pus is pocketed at the base of the nail, the pocket may be opened by pushing back the skin with the flat end of a toothpick, and the cavity may be filled with any good antiseptic. In one case that was followed by osteomyelitis, no drill was obtainable and the writer simply comminuted the bone with a pair of plyers. This was done after a consultation had determined that the thumb would be destroyed in any event. The bone was broken into several pieces, the drainage of the medullary canal was good, the resultant thumb was not amputated, but proved to be a very useful member indeed. The resistance of the compact wall of the phalanx was most surprising, and the procedure of boring a hole through the bone is probably easier and better, but as has been said, the result of multiple fracture was so good that it was both gratifying and unexpected.

# Sleeping Sickness, as it is Known Today.

SIMON R. KLEIN, M.D.,
New York City.
Public Lecturer; Pathologist. Broad Street Hospital; Member of American Public Health Association; Formerly Professor of Bacteriology, Fordham University, School of Medicine.

It is the third epidemic we are going through the last two years. First came the infantile paralysis for a short visit, to be excomplimented on a short notice. The Spanish influenza was of a little longer interregnum and required strong hands to be put out. Another patron is expected by the New York authorities, it is hoped for not a long stay.

We Americans do not know much about "sleeping sickness," either from medical or social standpoints, neither from a satyrical. We are too busy, too much in a hurry to "sleep," and too strong in health to be so easily infected by insects, flies, bacilla or any kind of parasites. No epidemic can stay for long time under our auspices. We are too strong for any "bugs." The climate is excellent, probably the best in the world, between the Rocky Mountains and Catskills, the Michigan Sea and Bay of New Orleans.

Do not you notice it, that epidemics in European countries are always of long duration. The cholera could not be defeated for 28 months in 1891, 1892 and 1893, while spreading in Russia, Germany, Austria and Italy. It took Professors Koch, Behring, Metschnikoff, Scheuthauer, Hogyes, Babes and Wasserman nearly 8 months to extirpate the germs of diphtheria, before Behring came to the front with his wonderful, victorious discoveries and inventions. And so on, so forth, etc.

We Americans usually do things quickly and take more extensive advantage of our scientific, and especially medical and surgical discoveries, etc.

Now let us talk about the "new comer." He, or she, or it comes from Africa, Egypt, Uganda, formerly German East Africa, and carried, supported and fed by tsetse flies. Besides, very successful transmission experiments were made

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with Glossina fusca. It is possible also, that the Glossina morsitans, G. pallipidea and G. longipolpis are also implicated, and, according to Dr. Naeve's statement, tracing the route of caravans back to Northern Rhodesia, the G. morsitans was also regarded as one of the greatest mischief makers. The late Professor Robert Koch, discoverer of the bacila of tuberculosis and Asiatic cholera, as a result of work in Uganda and German East Africa, was of that opinion, that though it may be possible to infect Glossina fusca and G. pollipides with the trypanosome, this must occur so rarely under natural conditions that they may be disregarded as conveyors of the trypanosomes. Koch also noticed, that although dogs and monkeys are known to have become naturally infected, the occurrence is so rare and the animals have died so quickly after infection, that they may practically be disregarded as reservoirs of the disease. He has further drawn attention to the probability of the disease being communicated by coitus. Thus, of 26 women in the German segregation camp, where there was a total of 425 cases, 7 had never been in sleeping sickness regions. It would seem that they had contracted the disease from their husbands, all of whom had died of sleeping sickness. When sleeping sickness was found in villages outside the Glossina belt, women only were found to be infected, the children and men who had not visited sleeping sickness districts being unaffected. In one case, the three wives of a man suffering from sleeping sickness contracted the disease.

Koch lays stress on the fact that, on two occasions, parasites have been found in the salivary glands of the fly, and on the presence of several forms of trypanosoma gambiense in the alimentary canal. We therefore believed that such a development cycle exists. How long a Glossina can remain infective is not known, and this is the question which requires settlement. Koch believes the fly to be long-lived, as it is not known to have any natural enemy, while its reproductive energy is feeble.

Dr. E. A. Minchin found that the capability of infecting a vertebrate animal only lasts for a period of 48 hours; with a longer interval no infection was obtained. It was also noticed that freshly caught flies may produce infection with trypanosomes, without having been fed previously on infected animals. Experiments made upon monkeys, show that many freshly caught flies are either free from the infecting agent, or that some monkeys are entirely immune. Thus, in one case, 2,299 flies were fed on a monkey over a long period without infecting it, while in another case, as small a number as 134 flies produced an infection in it. When infection did take place, it occurred much more rapidly with the freshly caught flies than with those that had been fed upon animals infected with trypanosomes. In experiments made with flies fed on an infected animal, Minchin found that he could infect nine out of ten animals, each with a single fly.

Doctors Martin and Darre are describing certain nervous symptoms, observable at the onset of the malady. In one exceptional case, there was a general cutaneous hyperesthesia, save on the plantar and dorsal surface of the feet, where anesthesia was marked. There was also a partial paralysis of the extensors of the great toe. Babinshy's sign was present. The symptoms slowly disappeared under treatment with atoxyl.

Attention has recently been directed to the craving for meat displayed by sleeping sickness patients and along with this, a great desire for salt was evinced by patients in the Ugandese camps.

In regard to staining, by Giemsa method, intranuclear centrosomes are noticed. Rapid multiplication of T. gambiense takes place in the blood. A curve of infection has been observed, with the number of parasites increasing in the blood and direct formation of latent bodies found in the lungs, bone marrow and spleen. These latent bodies event-

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ually becomes transformed into small trypanosomes, but apparently only a certain proportion of them undergo this change, the others disappearing. This indicates a complete cycle in the blood of a single host, the rat being the animal studied.

It is recommended that, for examination, a fresh film of blood should be taken from the pulp of the finger and if this examination is negative, and if the patient has enlarged glands, these should be punctured, in the cervical region for choice. If the neck glands are too small, try the submaxillary or inguinal. If the parasites still cannot be found, take 10 cc. of blood, centrifuge and examine the leucocyte layer, making, if necessasy, a couple of films. If the results be still negative, the patient is probably healthy, but if necessary, and there is no objection, proceed to lumbar puncture, removing 10 cc. of the cerebrospinal fluid and centrifuging it for 15 minutes.

As stated above, the only remedy is atoxyl, introduced by Koch. Dose: Half a grain of the drug by subcutaneous injection on two successive days and after 10 days to be repeated. In 20 per cent. of cases so treated the trypanosomes disappeared permanently, but in other instances they returned. Hence, it is necessary to repeat the treatment every 10 days during two months.

The disappearance of trypanosomes from the blood, after atoxyl injections, is attributed by Koch to a state of immunity, produced by an absorption of dead parasites. Atoxyl is very effective in diminishing the size of the enlarged lymph glands, but one of its drawbacks is that it is apt to produce permanent blindness, if given in excessive dosage. Hence acetylated atoxyl has been introduced and used by Ehrlich, Nierenstein and others. It is an antipyogenic containing arsenous acid. Mention may also be made of the Liverpool method of using atoxyl combined with corrosive sublimate, or with apriment, as tried by Laveran and Thiroux. Antimony salts were introduced by Pimmer and Thomson.

Especially in regard to treatment, we must not forget that the methods applied, even by such research workers as the late Koch and Ehrlich, were employed mainly with tropical patients.

We have not, as yet, seen many cases in the United States. Consequently we cannot make permanent rules for methods of treatment. Another handicap is the positive findings in animals, and negative or mixed forms in human beings. You know what Pasteur said on the "boiling point of bacteriology," that "what is pleasant and good for the monkey and guinea pig, must not be trusted by human beings." Still there is a little "difference" between the monkey and the man—even if not a very great one—in so many, many unexplored, but undeniable cases! You will remember, during the great European war, there were, in so many instances, hardly possible distinction, the man from—the beast!

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## NEW YORK AND NEW ENGLAND ASSOCIATION OF RAILWAY SURGEONS.

The Twenty-eighth annual session of the New York and New England Association of Railway Surgeons will be held at the Hotel McAlpin, New York City, on Monday, October 20th, 1919. A very interesting and attractive program has been arranged. A Symposium on "The Modern Treatment of Infected Wounds" will be presented by leading surgeons. Railway surgeons, attorneys and officials and all members of the medical profession are cordially invited to attend.

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Binghamton, N. Y.

Dr. J. S. Hill,
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Bellows Falls, Vt.

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# Abnormalities of the Lachrymal Apparatus.

D. T. ATKINSON, M.D.,
San Antonio, Texas.

There are no eye conditions, perhaps, in which patients expect quicker results and which, in reality are more obstinate under treatment, than are abnormalities of the lachrymal apparatus. These may be classified under four heads: Misplacement of the punctum and stricture of the canaliculus, acute and chronic catarrhal inflammation of the duct and sac, lachrymal abscess and lachrymal fistula.

Of these conditions stricture of the punctum lachrymalis is perhaps the most common. This often occurs in trachoma cases in which blue stone has been used extensively, or it may be due to cicatricial tissue resulting from the trachoma itself. It is often brought about by trauma. Once I saw a case due to a cut with a finger ring received during a street brawl. I remember having seen another case resulting from a contused wound caused by a flying chip of stone. In the latter case the punctum was entirely obliterated.

Misplacement of the punctum is nearly always brought on by a contraction of the integument of the lower lid, either from ectropion or from scar tissue of the face. In these cases the principal disagreeable symptom is epiphora. The tears, by continually flowing down the cheek, often keep a dermatitis which is troublesome and unsightly. This is usually aggravated by the attempts of the patient to dry the eye with the handkerchief.

Foreign bodies, such as concretions, may cause a closure of the punctum. Growths upon the lid may produce a like result. Another very frequent factor in the production of this trouble lies in unskilled attempts at probing the duct. The punctum may be torn during this procedure, the resulting adhesions permanently closing the opening.

Another cause of the closed punctum may be found in irritation of the conjunctiva and consequent swelling of this membrane from eye strain. In my own work I have seen several cases with rather persistent epiphora which were entirely relieved by the proper correction of their errors of refraction.

Catarrhal inflammation of the duct and sac usually has as its etiologic factor an abnormal condition of the nose. This may be a pressure of deflected septi or turbinals causing stricture of the lower end of the canal, or the cause may be found in polipi and other nasal tumors packed around the mouth of the canal. Syphilis has been known to cause a closure of the canal opening. This may occur during the secondary stages due to mucous patches at the orifice or it may be seen in the tertiary stage resulting from gummatous deposits about the opening.

In this condition, when due to obstruction, the most noticeable symptom, besides the epiphora, is a distension varying all the way from a swelling scarcely preceptible to a protusion as large as a pigeon's egg. Slight pressure over this distended wall causes a back flow of mucous from the canaliculus.

Abscess of the lachrymal sac usually follows in the wake of an inflammatory process in the duct with obstruction of its lower end. The secretions which have been retained long in the sac become infected with consequent abscess formation. Besides pain, which is often intense, the condition may be accompanied by chills, fever and general malaise. An intense blush over the side of the nose, lids and face may accom-

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pany this condition. This deep redness of the skin with swelling and oedema of the lids has very often been mistaken for erysipelas. I remember, while doing my first general practice, of making this mistake, the diagnosis being cleared up a few days later by a consultant, rather to my chagrin.

Usually fistula of the lachrymal sac has as its cause a neglected abscess. The rupture of this abscess will, in the large majority of cases, leave a fistula opening. I do not recall ever having seen a ruptured lachrymal abscess that did not leave a fistula and I never saw a fistula which was not due to an abscess. A number of cases have been reported, however, which have resulted from syphilitic processes in the bone and soft parts.

The prognosis in these conditions depends upon the accessability of the structures involved and is not always flattering. Structures of the punctum may be overcome by the dilator. Even when the punctum is entirely obliterated the canaliculus may be found and freely opened. The canaliculus is sought for with a very small, sharp-pointed bistoury and after it is found the bead-pointed knife is slipped into it and the incision is made upward with the handle of the knife describing the arc of a quarter circle.

Freely dividing the canaliculus, except in cases with positive indications—such as punctum or canaliculus strictures, should be avoided as the results are often far from desirable. Epiphora, due to punctum displacement from ectropion, may be relieved by a plastic operation on the lid. Even where there is much cicatrization of the skin on the cheek with considerable contraction, giving rise to a constant overflow of tears, much may be done to alleviate the condition by plastic surgery, the operation serving a double purpose of relieving the deformity and checking the epiphora.

Next to the punctum canaliculus strictures comes strictures of the duct from a catarrhal condition of the mucous membrane. In these cases the temptation is strong to bring the patient the relief he seeks by daily probing the duct. Too frequent probing of the duct is a practice to be discouraged because of the trauma caused during this procedure with consequent cicatricial contraction. I have had better results by daily enlarging the punctum with a dilator, inserting the point of a lachrymal syringe and gently irrigating the duct. I use a saturated boric acid solution for this purpose. I have had several cases this last year which responded beautifully to the daily cleansing of the duct, and which, to all appearances, are permanently relieved.

The nasal chambers should not escape attention in these catarrhal conditions of the duct. Very often this affection is due to the extension of a similar condition in the nose, which by a catarrhal swelling of the mucous membrane, causes an occlusion of the opening of the duct. Nasal tumors, polipi and enlarged turbinals which are found to be responsible for the mechanical closure of the orifice should be removed. Deflected septi should be straightened. The nose should be sprayed or syringed with some preparation which will reduce the hypertrophy of the mucous membrane and keep the nose free from secretions. Dobell's Solution, to which is added adrenaline chloride, one drachm to the ounce, will give good results here.

When abscess threatens ice should be kept constantly applied to relieve the inflammation. Hot compresses predispose to the formation of pus and should be avoided. The canaliculus should be slit and the sack washed out every ten or twelve hours with some antiseptic solution. When an abscess has formed in the sac, and has either ruptured spontaneously or has been incised, a fistula is the inevitable outcome. In all these cases of fistula the treatment is surgical and an extirpation of the sac should be advised.

518 State Bank Bldg.

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# The Direct Transfusion of Blood.

JOHN J. REYCRAFT, M.D.
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Were we always to continue to read on subjects thereby gaining theoretical knowledge the chances are greatly that somethings that could not become practical would become so thoroughly instilled into our belief that we would find it very difficult later to disabuse our minds when added wisdom demonstrated to us beyond a doubt of the erroneousness of excepted tenets. Such would have been the condition in my case, then what I have learned by actually doing things is the basis of the thoughts of this paper.

That the necessity arises for the taking of blood from one person and giving it to another goes now without anybody seriously contesting the advisability. The matter of difference of opinion is not that it should be done, but how it should be done. When the occasion presents for such procedure to be made it is usually so imperative that the one upon whom it devolves to carry out the transfusion in ninety-nine times out of a hundred has no time to consider the fine spun reasonings of the theorist or the laboratory worker. That there are people whose blood cannot be placed within the veins of another with impunity is well known to many who have tried it, and it is well enough to make a laboratory finding if you are so situated and have the means at your disposal and the time wherewith to consider without injuring the recipient by your dilator method. That the donor may have typhoid fever or syphilis with the characteristic causations in the blood, or not confining ourselves to those two this might be widened to embrace dozens of other troubles which might be communicable through exchange of blood.

These laudible researches should not be minimized nor ridiculed nor should any approbrium be cast upon those who remind us that they should be had and with all due consideration of the extreme scientific considerations which have been given we must really momentarily forget that such valuable considerations are ever made and proceed direct, as most cases warrant that we should to the saving of life for the reason of want of circulatory fluid of nourishment to the body in weakened aenemic subjects. Most surgeons are presented hastily with the desire to execute a transfusion in urgent cases and therefore they must discard temporarily the scientific end for practical results.

When Dr. Lane of London told us that we could put normal salt solution in considerable quantities into the circulation many were skeptical and did not believe that the system would withstand the shock of such an innovation of fluid into the vascular system. It is now a very commonplace operation and almost any man who has done surgery has performed that feat times innumerable, and many a life has been saved by quickly introducing this fluid. Not every time, however, is this the proper and the best introduction that can be made into the veins and we naturally turn to the most promising that can be had, nor can we always question the purity of the blood of the donor as donors are always scarce and very few outside the immediate relatives can be found who will submit to the somewhat hazardous extraction for the benefit of another. Malaria, typhoid carriers, syphilitic or others must momentarily be forgotten as it is a matter of getting blood or some ingredient of blood which in most cases is considered more desirable than saline.

It is possible to extract quantities of blood from which we can derive serum

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in any quantity desired. This would be all well and good to take and to use were it not for the very slow and tedious process of abstracting this one ingredient from the others which go to make up the circulatory fluid. Time must be used in allowing the blood to coagulate then again we have the necessity of keeping it at an even temperature and getting it filtered so as to exclude all forms of clots and agglutiations so as to be doubly sure that there will be no emblus or thrombus to be pressed into the circulation of the receiver with all the dire calamities which follow in their train, and by the way, I do not believe that there is nearly so much danger as we have been taught lurks about such occurrences. After having the serum ready for use after a long and tedious preparation still we are confronted with much loss of time sucking this up into a syringe and inserting it time after time in added quantities and the patient may die before we are able to accomplish our undertaking.

Early in my practice I had an idea that some cunningly devised instrument could be obtained through an instrument house which would facilitate the transferrence of blood or any of its ingredients from one to the other, and was very greatly disappointed in any and all of them that I obtained for this purpose. Many years ago the pipet of glass was much considered and I remember distinctly trying to take blood from one and allow it to pass through a glass tube into another only to find the blood clotted immediately when it came in contact with the glass and that the whole attempt must be discarded for the very reason that it could not be done, or, could not be done successfully and that really drams and not ounces of blood were carried from one to the other. That these glass tubes are much more suitably adapted for this operation if paraffined is common knowledge and I could continue to use paraffined glass tubes to accomplish the end had I not found something far more practical in the accomplishment.

The method that I am now using, is, not to allow the escape of blood from the lumen of one blood vessel before it is placed in the lumen of the other. Arterial blood being aerated makes a powerful argument for its use, rather than for the use of the nonaerated blood obtained from the vein. This advantage and disadvantage could lightly be weighed if we found a far greater ease in taking the venus blood instead of the arterial, but such is not the case and really we find the most desirable blood the easiest of accomplishment and the visatergo of the venus circulation is so lacking in propelling force, and the propelling force is so readily obtained from the heart of the donor directly compelling the entrance of his blood into the circulation of the recipient that we must use that method by all means in our undertaking. No artery in the human is so easily manipulated as the radial, because of its proximity to the surface and it being on a member that can be readily approximated to the other blood vessel necessary, therefore I have found it desirable after having placed the two parties to the accomplishment in the proper positions for adjustment and making the anesthetic, whatever is desired, then strip up two and a half inches of the radial, and by the way, this can be readily done, but in doing so you will find a great many little arteries leading off the main one which may be tied with a very fine silk and one knot only used. After it has been separated out, place a soft ligature on the proximal end and draw it tight enough to temporarily obliterate and that, too, with a single knot so that it may be readily unloosened when the time comes to open the flood gate. Any vein on the forearm of the receiver, no matter how small, is capable of unbelievable dilatation, the external saphneous vein is as good as any, and having that in position it may be grabbed with three small haemostats and gradually

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drawn apart so that you could easily introduce an uterine sound or something even greater.

I have here for your inspection, if you care to make it, cloth representing a vein and an artery which are easily distinguishable by their color and I am going to show you my method of introducing the one into the other. I need not say that it is the red which I introduce into the blue. The walls of the artery being far more thickened than those of the veins can, under any method, be inserted within each other, but usually this is hard to do and the results unsatisfactory. To accomplish it more satisfactorily I insert my needle through the one wall of the artery, preferring a straight needle, and I tie as small a knot as I possibly can and cut off one end very close to the knot and the other I thread into a needle of fair-size so that it may be easily threaded. The needle then I carry into the vein much the same as a fishhook is carried through the body of a fishworm, and brought out through the walls of the vein at a sufficient distance from the point of entry so that the blood will pass forward into the lumen of the proximal vein more readily than it will turn about and come back between the artery and the vein.

With these three small mouth-toothed forceps holding on to the end of the vein and this thread in the end of the artery pulling up towards the point of exit of the needle from the vein, I find that the traction that I can make with this thread will make the invagination very easy indeed. Having had the insertion made as far as I possibly can the vein can be closed around the artery by picking up the slack with another forcep, or in fact two or three will close the sides of the vein and thereby prevent the vein covering from becoming unworkably larger than the artery. Having now accomplished the invagination I remove the ligature placed around the artery and the blood pressure created by the heart of the donor will be sufficient to make a spurting artery which will soon carry without stopping a sufficient quantity of blood into the receiver to accomplish the object intended.

How much blood to take from one and give to another is a matter of personal judgment. Should in the judgment of the operator, the receiver require a considerable quantity of blood, it would then be up to him to let in as much as could be spared by the donor. If the donor should become exsanguinated it will become quickly shown by a weakness of the heart action, clamminess and pallor of the skin and a tendency to vertigo and even to sincope. The donor must be considered even though the amount is not all that the surgeon believes is necessary for the other. On the other hand the receiver may show signs of an over-amount of blood being received with a consequent dilatation of the heart which may dilate because of an inordinate amount of blood passing through the veins and the recipient being unaccustomed to such an amount will shortly bear evidence. Seldom will either patient give or receive blood sufficient to cause any deliterious consequence in either. These matters ordinarily are ancient history and really the new part is the part showing how to invaginate the artery into the vein which accomplishment in my hands has been in every case in which it has been tried by me successful.

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## BETTER WAIT.

The J. A. M. A., of August 9, 1919, on page 422, has an editorial, entitled, Laennec and the Stethoscope, a great discovery developed in detail, in a most praiseworthy manner. Now that the J. A. M. A. has at last discovered and registered this great fact, perhaps the stethoscope will come into general use. Though maybe the profession would do well to wait until Laennec and his instrument receive the approval of the "proper gander," whoever he may be.

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# Gaining and Losing Power.

C. L. REDFIELD.,
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For previous articles by Mr. Redfield see ***The Western Medical Times*** for February, May and November, 1917; and October, 1918. For a condensation of the facts and a general discussion of the principles involved, see Redfield's ***Dynamic Evolution,*** published by G. P. Putnam's Sons, New York.

Let us assume two boys, John and James. I have assumed these boys before, but I want to put them on the witness stand again for the purpose of presenting additional evidence. These boys are of the same age, go to the same school, and play the same games. John is physically the stronger of the two. In any contest of physical strength between them, John easily becomes the victor. But in scholarship, James is superior to John. He stands higher in his class, and he learns his lessons with less effort. Evidently James has more mental power than John, just as John has more physical power than James. The difference is an inherited difference.

In due time John and James leave school and have to hustle for their living. The jobs they get are those which happen in their way, and are not at all determined by their inherited qualities. As a consequence, John gets his job in a lawyer's office, and James finds his as a helper in an athletic club. John takes up the study of law. That, and the intricacies of lawsuits, compel him to exercise his mental faculties day after day, month after month, and year after year. John's mental efforts occupy practically all of his time, and his physical efforts are reduced to the smallest consistent with existence.

James, being in contact with athletics and athletes, takes up physical training, and in due time gets to be a trainer of others. In this work, James exercises his muscles day after day, month after month, and year after year. As a result of this continued physical training, James becomes physically much more powerful than he was before. If, after ten years of sedentary life by John and the same of physical training by James, the two come together in a physical contest, it will be found that the tables have turned and that John stands no show as against James. On the other hand, if we compare them mentally with each other we will find that John has learned many more things than James has, and that he carries these in his memory. As it requires mental power to carry things in memory, it is quite evident that John is now mentally more powerful than James.

We know that physical strength is built up by physical exercise. Such exercise is used for that purpose in connection with all athletic sports, and was extensively used for the same purpose by the Greeks and Romans. It was regularly used in training soldiers by all the nations involved in the recent war, and has been used by the trainers of race horses for centuries. It is impossible to make an athlete out of a man by simply feeding him, neither can we make a 2:10 trotter out of the best horse in the world by simply feeding him. Physical strength is built up by physical exercise and is not built up in any other way. The same thing is true of mental powers. A man can get into that condition in which he can carry many things in his memory only by many years of mental activity.

Physical strength declines or degenerates as a result of physical idleness, as is seen by the fact that a sedentary man loses the strength he had in his earlier and more active days. When a race horse is retired from the track, his racing powers gradually decline as the

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result of idleness. These things are well known and may be classed as positive knowledge. While we do not have direct positive knowledge that mental powers decline as a result of mental idleness, we have plenty of indirect evidence on the point. Without going into that indirect evidence, we may say that mental and physical powers decline as the result of mental or physical idleness, and (barring accident, disease and starvation) do not decline for any other reason.

Let us suppose that John and James were twenty when they got their respective jobs. At that time John was physically stronger than James. Ten years later, at the age of thirty, James is physically stronger than John, the changed relationship being due to the fact that James has developed his physical powers by training them, whereas John has permitted his to decline as the result of physical inactivity. Another ten years of physical activity by James and physical inactivity by John, and the two are now forty. James is stronger than John, but is the difference between them in this respect greater at the age of forty than it was at the age of thirty?

Again another ten years of the same activity and inactivity go by, and James and John are now fifty. Has the difference between them increased during the last ten years? And yet again another ten years of the same kind go by, and James and John are now sixty. Has the physical difference between them still further increased? Do powers continue to increase indefinitely by continued exercise, and do they continue to degenerate indefinitely by continued idleness?

The answer is that such development of powers by exercise, and such degeneracy of powers by idleness, continue as long as activity or idleness continue up to some unknown point near the end of life. This fact not only has a bearing upon a person's efficiency as a member of society, but it affects his powers of resisting disease, and his longevity under normal conditions. It also affects the inherited ability of his offspring, their powers of fighting disease, and their longevity. As these are important things we will look at some of the concrete evidence bearing upon the matter.

The trotting horse is able to reproduce before he is three years old, and is full grown before he is four. But development of trotting power under continued training does not stop at the attainment of full growth. It is known to continue up to at least seventeen years of age, and there are records of thousands of cases in which it continued beyond ten years of age. The race tracks of the United States showed more than a hundred such cases during 1917. Those persons who think that animal power is a function of animal structure might try to explain how the structure of an adult animal will continue to change year after year under continued training. The idea that power is a function of structure is the same fallacy that impels men to try to make perpetual motion machines.

The cow reproduces before two years of age, and is full grown at three. But the cow's milk-producing power is not limited to what exists at full growth. When cows are regularly bred and regularly milked they will continue to increase in milk-producing power up to at least twelve years of age. This is true for both Holstein and Jersey cows, as is shown by official tests. I have published tables taken from official records for both of these. The development of power under continued exercise is independent of growth in size or shape.

Let us turn aside and consider the powers of plants, because the matter under immediate consideration is something fundamental in living things. If we take some wild plant and attempt to reproduce it by cuttings, we are likely to find that it can be reproduced that way only with difficulty. But if we take a cutting from the first plant raised that way we find the second time it grows a little more readily. If we take a cutting from the second plant to raise a third, we again find that it starts more easily,

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and so on time after time. By many repetitions the plant develops the power of producing roots abundantly from cuttings. By exercising the powers which it has it acquires powers which it did not have before, and which never existed in any ancestor.

There is no selection in this matter. No seeds are produced. The final plant is really a developed section of the original plant, but has powers which the original plant did not have. A large number of our greenhouse plants are now produced by cuttings, but originally came from stock which would grow that way only with difficulty.

All plants raised for any considerable length of time by division, like tubers, bulbs, cuttings, buds or grafts, gain the power to produce roots abundantly, and at the same time they lose the power, sooner or later, to produce seeds. By continually exerting themselves along particular lines plants develop new powers along those lines, and by continued idleness along other lines (seed production) they lose the powers they originally had.

Man took wild plants, and, by continually training them, developed their powers of producing the things he wanted. Many persons will say that such changes were brought about by selection. I will return to the matter a little later, but in the meantime I may remark that selecting a change is not making it.

In the wild state these plants had to fight for existence in a world covered with other plants. When man domesticated these plants he protected them from weeds. As a consequence of not having to fight for room against other plants, our domesticated kinds have lost the power of so fighting, and are unable to maintain themselves when deserted by man. Idleness along that line caused a loss of power on that line. There is no selection in this. Man did not select plants because of their inability to protect themselves.

Flagellata are protozoa which multiply by division. Dallinger subjected these animals to heat and found them dying at 74 degrees Fahr. But by beginning at 60 degrees and gradually increasing the temperature he finally got them to stand 158 degrees without dying. Several years were required to accomplish that result. There was no selection in this. The final animals were simply divisions from the original ones. By continually exercising the powers they had, they acquired powers they did not have before.

Corn is sensitive to climatic changes, and can endure only slight changes without suffering seriously. But by moving it a short distance northward each year, it is now fully acclimated in regions where it was impossible to raise it forty years ago. Corn goes through the seed stage; flagellata do not. But each of them by continually exerting the powers they had, acquired powers of resisting temperature changes which they did not have before. The presence or absence of a seed stage does not affect the matter except as to the rate at which the acquirement occurs. The acquirement comes as a direct result of exercising the powers in existence. When the matter extends over several generations, the seed stage simply inserts idle periods during which there is no acquirement.

Persons who take arsenic, opium, cocaine, etc., begin with small doses, but gradually increase the amount until they are able to take quantities which would have been fatal if taken at first. By fighting a poison a person develops a power of resistance he did not have before. The same thing is true of vaccination. By fighting a relatively weak cow pox a man acquires the power of resisting the more virulent smallpox.

By beginning with small doses and gradually increasing them, pigeons have been made resistant to rattlesnake poison. Resistance has been built up in this way until pigeons were able to withstand a dose more than four times as powerful as that which would kill in the first place. By exercising the feeble

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powers which they had, these pigeons acquired powers which they did not have before, and which never existed in any ancestor.

Disease producing bacteria are active when in a hostile environment. When they invade a man the question is simply whether they kill the man or the man kills them. It is a match of strength and a fight to a finish. If the bacteria are removed from the hostile environment in the man or other animal, and are cultivated on artificial media for some time, they are relieved from the necessity of fighting for existence, and gradually lose the power to so fight. It is a case of loss of power by idleness. Bacteria so raised lose their disease-producing virulence. On the other hand, if bacteria are inoculated from animal to animal in series, they are put through a regular course of training which increases their virulence. By compelling bacteria to exercise the powers they have, man can cause them to acquire greater powers than they had before. Or, by placing them in some position in which they do not have to exercise the powers they have, man can cause those powers to decline to something less than they were before.

Let us return to John and James. John was originally more powerful than James, but by reason of activity by James and idleness by John, the positions were reversed and James became more powerful than John. We know that James gained in physical strength by physical exercise, and the other things we have reviewed show that the principle involved is universal in all living things. James gained in power by physical exercise, which is work measureable in foot-pounds. Is it possible that James, or any descendant of his could gain in power in any other way than by work performed? Is there any hocus-pocus operating through the germ by which a son of James can be born more powerful than his father without anyone having done any work to acquire that power?

Those who think that such a thing can occur should give some reason for their belief. Or, better yet, they should point to some concrete case in which such a thing actually did occur. There are plenty of records among trotters to be examined, but not one of them shows anything of the kind. The idea that improvement in the powers of living things can come by mutation is scientifically unsound. It involves a belief in either special creation or spontaneous generation.

# Styptics in Nasal Hemorrhage.

JOHN C. WARBRICK, M.D.,
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Of all the various styptics recommended by the text-books to be used in nasal hemorrhage from different causes. there does not seem to be one that can be singled out as being much better than all of the others for this use, and hardly one that can be said to possess any distinct advantage locally. This is judging from what many of the authors state and from the large number of solutions that have been taken into consideration.

Vinegar and lemon juice have been suggested as having value when injected into the nasal passages in case of hemorrhage. It seems to me, however, that something better than this can be used in such instances. In the hands of some, of course, one solution may be found to be of more service than another, according to conditions and experience.

Some of the solutions may not have been tried properly in cases of hemorrhage, nor their chemical action been properly understood, so that one or more

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of them may have fallen unjustly into disrepute.

It would not seem at all out of place to consider all of the various styptics that have been mentioned as possessing some value in nasal hemorrhage at any time, from those used as household remedies to more modern solutions, and try to place them in some order, according to their merit; especially those used in hemorrhage from the nose as a result of an operation.

Hemorrhage of the nose, as is known, may come from a number of different places and from numerous causes. It may come from the naso-pharynx and be either local or general. The blood may come from some part of the inferior turbinate body or from some part of the middle one. It may come from simple ulceration of the septum, or from erosion of some other part of the nasal cavity. It may also come from a simple or chronic catarrhal ulceration in the nostrils, or that due to syphilis. It may be a result of nasal congestion, or of blowing the nose, also of mucous polypi, firoids and from spurs in the cavities. It may also come from other sources as well, not necessary to deal with here.

A common place for bleeding to begin is from the front and lower part of the nasal septum of the left passage, not far from the entrance. It would seem to result mostly from a state of plethora or, in some cases, from erosion of the tissue. Hemorrhage may occur from the nose, of course, in certain diseases, such as diphtheria, hemophilia, and affections of the heart. When it does occur it may be somewhat difficult to know just what to do to check it, until the source of the bleeding is located, when it occurs apart from an operation.

So far as using a styptic in any part of the nasal cavity is concerned, it would not seem to make much difference what part the blood comes from, in using any solution. To check hemorrhage, a general practitioner does the best he can with the material he has at his command, even if he does not know the anatomy of the nasal cavity well, or what solutions are listed to use in such cases. It is different, however, with a specialist treating the nose and throat all the time. When hemorrhage occurs he should know what to do at once to check it. This article gives a list of things that may be used to check hemorrhage from the nose, as a result of operations. It also gives a list of things that may be tried to check bleeding from the nose, coming on from an unknown cause or, as it is said, occurring idiopathically. It mentions all of the things that can be used in hemorrhage from the nose or throat.

### Hemorrhage From an Unknown Cause.

1. Sometimes bleeding occurs in one or more members of a family and just what to do is often not known. However, a household remedy of some kind might be tried before sending for the family physician. Thus the old familiar webs of spiders are not spun for nothing. Cobwebs may be used to stop bleeding. I have known these to be pulled off the corner of a house or building and put in the nose as a plug. If enough could be had they may be useful in checking a small flow of blood.

2. The dust of hops has also been used as a styptic in the nasal passages, acting in the same way as cobwebs.

3. A key is sometimes put on the nape of the neck as having some action in checking a flow of blood. It may tend to act reflexly, by chilling the skin. Ice and cold cloths may be used in the same manner.

4. Ice or cold cloths may be put over the bridge of the nose.

5. Raising the arms above the head may be tried, but is not of much benefit.

6. Witch hazel may be tried as a styptic, but it is only a feeble one. It is often kept on hand as a household remedy.

7. Hydrogen peroxide has been used

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as a styptic, to stay bleeding from the nose, but it is not reliable.

8. Cocaine, in a 10% solution may be tried, but is not reliable.

9. Digital compression of the facial artery may be tried.

10. Nitric acid, given internally, may be of use.

11. Ergot, internally, may be of value.

12. Emetine, one of the later remedies, may be useful.

13. Other substances may be used hypodermically or applied locally, such as thromboplastin, hemoplastin or coagulen.

HEMORRHAGES FROM OPERATIONS.

Adrenalin hydrochloride or suprarenalin are useful to check a superficial bleeding, but not anything greater.

Antipyrin, a 10% solution in hazeline, may be of some value, but is not reliable.

Plugging the passage with absorbent cotton or guaze is a good method to use where the bleeding cannot be gotten under control. It may be done anteriorly or posteriorly, and the former may be enough, as it is more easily accomplished.

A solution of adrenalin hydrochloride, of antipyrin, or perchloride of iron may be applied to the cotton before plugging the cavity.

Tincture of perchloride of iron is useful to check hemorrhage from the nose or tonsils and, in my opinion, is one of the best styptics to use. Some, however, have objections to iron in any form as a styptic, because they think other agents are better and more agreeable. Also cleaner and give safer results. Just what those agents are I would like to know, as I have never been able to find anything to take the place of Tr. Ferri Perchlor. solution. It is said iron may dislodge emboli which may enter the general circulation and again it is said iron is an old, useless remedy. Just why such statements should be made I do not know. In my hands for many years, during which time I have had to check hemorrhage more than two hundred times, as a result of operations on the nose and tonsils, I have never used anything that has given me such satisfaction as Tr. Ferri Perchlor. I have used it in all kinds of cases and in hemorrhages of all shades of severity. In all of my cases I have never had to rereport a single bad result, nor did I ever have any fear of danger. It is said that experience is about the best guide to follow. So, in the use of this solution of iron, it has more than proved its merit. It seems to me that a hemorrhage it could not stop would be one almost sufficient to kill a patient, while the idea that it will do any harm is about one shot in a thousand of successful results following operation. It may not be just as agreeable to use as other things, nor quite as clean, but this depends, to some extent, upon how it is used. In checking a hemorrhage it is results that are looked for and not mere thought of things that are agreeable and nice to use. The solution of Tr. Ferri Perchlor. is the best iron solution to use. It is clean-cut and reliable. It may be used as follows, mild or strong.

Tr. Ferri Perchlor., drams 2, or dram 1.

Glycerine or water, q. s., drams 4, or drams 4.

In using this solution, I do not think anyone can make a mistake. It can easily be used by means of cotton on the end of a probe and applied to any bleeding spot. If a severe hemorrhage, it can be used on cotton to plug the nostril, without any fear.

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# Gall-stone Disease Complicating Pregnancy.

AIME PAUL HEINECK, M.D.,
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During gestation, women are subject to many surgical conditions. The safety of the product of conception, the safety of the mother, demand that our knowledge of the surgical ailments be increased. Definite and accurate conclusions should be formulated as to the most opportune, most appropriate, and therefore the most scientific treatment of any and all surgical states complicating pregnancy. In previous contributions, we stated that every case of ectopic pregnancy, irrespective of type or stage of development, calls for the immediate ablation of the ectopic ovum. Immediate operative removal of the ectopic ovum terminates the gestation and protects the mother from the morbidity and fatality incident to extra-uterine pregnancy.

In other contributions, also published in these columns, we urged that every case of appendicitis complicating pregnancy be subjected to operation during gestation. Appendicitis is a surgical disease; when it complicates pregnancy, it calls for the immediate operative removal of the inflamed appendix, irrespective of the type of inflammation, irrespective of the age of the pregnancy. In women, previous to and during the child-bearing period, the non-operative treatment of appendicitis invites disaster, immediate, remote, or both. The timely removal of the inflamed appendix to a great extent protects the mother from the complications and sequelae, from the morbidity and mortality, incident to appendicitis. Operative removal of a diseased appendix does not interrupt gestation, does not exert any unfavorable influence on delivery.

The frequency of cholelithiasis makes this condition one of great practical interest. In the collective statistics of nineteen European and American authors, 80,802 necropsies, the frequency averaged 5.94 per cent. (Hesse). As the manifestations of gall-stone disease are often unrecognized, misinterpreted, or misdiagnosed, its incidence is greater than is supposed, is far greater than the number of reported cases would lead us to believe. It occurs in both sexes and at all ages, in the fat, in the lean, in the weak, and in the strong. The older the patient, the more liable is he or she to have gall-stones. "Gall-bladder disease is pre-eminently a disease of the middle aged female, but is by no means confined to that age or sex."—Deaver.

Gall-stone disease is of common occurrence during pregnancy, during the puerperium, during lactation. In fact, its greatest incidence is in the child-bearing period. Statistics have established beyond dispute that gall-stone disease, latent or manifest, is more common in women than in men. Out of 655 patients laparotomized for gall-stones, 536 were women, 119 men. (Kehr.) Of 1,244 women operated upon for uterine myomata at the Mayo Clinic, 92, or 7.1% had gall-stones.

Statistics of 940 cases of cholelithiasis. (K. Grube):

| Age | 10-21 | 21-30 | 31-40 | 41-50 | 51-60 | 61-70 | 71-80 |
|---|---|---|---|---|---|---|---|
| Male | 2 | 6 | 44 | 55 | 38 | 6 | 5 |
| Female | 8 | 114 | 213 | 215 | 148 | 52 | 14 |
| Unmarried women | 6 | 24 | 27 | 27 | 19 | 2 | 2 |
| Married, with children | 1 | 82 | 177 | 176 | 124 | 44 | 9 |
| Married, without children | 1 | 8 | 9 | 12 | 5 | 6 | 3 |

Unquestionably child-bearing has something to do with the frequency of gall-stones in that state. Cholelithiasis may complicate a pregnancy otherwise

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normal; it has been found associated with ectopic gestation. (Brothers.) It occurs in primiparae (Heineck) deutoparae (Barillon), multiparae, VIII-para (Roith), IX-para (Graham). Manifestations of cholelithiasis may precede, coincide with, or follow an abortion or a premature labor. In seven of the analyzed cases, there was a history of one or more abortions, accidental or induced; Watson, one; Villard, two; Peterson, six; Brothers, ten. Gall-stone disease may become manifest and necessitate operative relief at any period of gestation: 2nd month (Bosse), 3rd month (Roith), 5th month (Mack), 6th month (Moulden), 7th month (Davis). In a large number of cases, the initial symptoms first occur during the child-bearing period (Rudeaux.) Our cases can be classified according to patient's age at time of operation as follows: The youngest was 21 years old (Villard), the oldest 42 years (Amann). From 25-29 years, inclusive, 19 patients; 30-35 years, inclusive, 11 patients; 36-40 years, inclusive, 5 patients. Ploger reports cases in which there was a definite aggravation of symptoms during pregnancy; Naxera reports eight cases in which the first attacks of biliary colic occurred during gestation. "Seventy-five per cent. of gall-stones are found in women and in 80 per cent. of these patients, the symptoms developed during pregnancy" (Torrance). Gall-stones are more commonly found in women who have borne children than in those who have remained sterile. Osler, quoting Naunyn, states that 90 per cent. of women with gall-stones have borne children; "84 per cent. of 135 women with gall-stones had borne children" (Peterson).

The literature of the subject contains case reports like the following. In an empyematous gall-bladder, associated with pericholecystitis, perforation from stones occurred during labor. Two days later the patient was operated, and thorough drainage was instituted; sepsis developed. Death occurred on the third post-operative day (Rose). Rupture of a calculous gall-bladder can occur previous to, during, or after labor. Pinard successfully operated a case of calculous cholecystitis on the 11th day of the puerperium. Vineberg incised the gall-bladder in two cases of acute cholecystitis, in one case, on the 10th day, in the other, on the 12th day after delivery and removed numerous small stones therefrom. Both cases recovered. In the same report he discusses a case of acute diffuse peritonitis consecutive to a ruptured gall-bladder, supervening a few hours after normal delivery. The condition was too grave to warrant surgical intervention. Death resulted twenty-four hours later. This patient had had, during her pregnancy, several attacks of biliary colic; her distended gall-bladder had been mapped out. Potocki's patient, a deutopara in the eighth and a half month of a normal pregnancy, had a sudden attack of right hypochondriac pain, nausea, vomiting, etc. Labor having started, the patient was delivered of a living, normal child. Eleven hours after the termination of labor, a cholecystostomy was performed; the gall-bladder contained pus and numerous calculi. Drainage. Recovery. In the discussion provoked by Graham's case, there was reported a case of death from general peritonitis due to rupture of the gall-bladder during labor. The post mortem revealed the rupture and 250 stones scattered about in the abdomen. Medical attendants should keep in mind that fever during the puerperium can be due to causes other than puerperal fever; appendicitis, gall-bladder disease, etc.

Greater familiarity with the symptomatology, clinical course, and treatment of cholelithiasis complicating pregnancy will lessen the frequency of occurrences such as the preceding, and will also qualify us to combat successfully, the various manifestations of gall-stone disease. I have analyzed and studied all the cases of undoubted gall-stone disease compli-

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cating pregnancy, reported with sufficient data, thirty cases in all, in the French, English, and German medical literature, during the years 1900-1918, inclusive.* Many more cases were studied, but owing to the fact that they are not reported with sufficient detail, they have influenced our conclusions only in a general way. In each case the diagnosis was verified either at the time of operation, or at the autopsy.

## Etiology.

The cause of gall-stone disease is not sufficiently known. Numerous theories have been advanced; not one has, as yet, been found worthy of general acceptance. The following three factors, owing to their frequency previous to or during the existence of gall-stone disease, impress one forcibly as being important predisposing causes. In the individual case, one, two, or all of these three favoring influences may be operative.

a. Conditions associated with, favoring, or causing biliary stasis.

b. Inflammatory states of the biliary tract, primary or secondary to local disease, or to some general febrile state.

c. Regimens or diatheses favoring or causing hypercholesterinaemia.

Cholesterin, the principal component of gall-stones, is derived from the bile. Simple bile-stasis can, through the precipitation of cholesterin, lead to cholesterin-stone formation. Precipitation is prone to occur in inspissated bile, and the elements thrown down may lead to stone formation. In the later months of pregnancy, the abdominal muscles and the diaphragm contract feebly, and the bile being inefficiently expelled, stagnates in the gall-bladder.

Stasis, in addition to separating out the essential constituents of gall-stones from the bile, favors the growth of bacteria in the residual fluid. According to Sherrington, bacteria cannot enter the bile ducts, as long as the bile is expelled at regular intervals. Bile is not an antiseptic; it does not prevent the development of bacteria; left exposed to bacterial contamination, it undergoes putrefaction. Obstruction to the bile outflow may be due to foreign bodies present in the gall-bladder or in the larger bile ducts, may be determined by inflammatory or other degenerative changes involving the gall-bladder or the bile ducts, or may result from such pathological states of contiguous organs as lead to impingement of one or more of the latter upon the bile ducts. Obesity, sedentary life, constipation, tight clothing, such as ill-fitting and improper corsets, etc., are held by some to be predisposing factors. Miyake believes that the non-wearing of corsets by Japanese women is one of the principal reasons why gall-stones are so infrequent among them.

Bacterial organisms are said to be the most essential cause in the majority of cases of gall-stones. In this connection, one should not ignore the relation of mouth and teeth infections to appendicitis and cholecystitis. In some cases, supplementing the noxious influence of bile stasis, in others, acting independently, in many, acting conjointly, there is present a bacterial inflammation of the mucous membrane of the gall-bladder, of the bile ducts, or of both. If the stone be of aseptic origin, the abnormal element lies in the composition of the bile; if the stone be of inflammatory origin, the pathological condition is the cholecystitis or catarrh of the gall-bladder.

A history of acute cholecystitis first observed within a few weeks or months of parturition is given by many of the patients operated upon for gall-stone disease. Both pregnancy and the puerperium are not infrequently complicated by acute exacerbations or recurrences of cholecystitis (Bettmann). The gastro-intestinal disturbances and constipation that attend the pregnant state no doubt

*All the periodicals to be found at the John Crerar Library, Chicago, Ill.

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favor the migration of the bacillus coli to the gall-bladder.

Although infection and retarded bile outflow predispose to gall-stone formation, they are not all-sufficient. Occlusion of the cystic or of the common duct may co-exist with an infected gall-bladder, and yet no gall-stones form. In order to produce calculi, infections of the gall-bladder must be of low type: colon bacillus, bacillus typhosus, staphylococcus, etc. Typhoid fever is considered an important etiological factor; it occurs in all lands and among all races, still gall-stones are very uncommon in the tropics; typhoid fever is less prevalent than formerly, but there seems to be no decrease in the number of patients having gall-stones.

Diatetic conditions can so alter the composition of the bile as to favor, suitable local conditions existing, the production of calculi. The supposition is that gall-stones are deposited as a result of error in metabolism—(over concentration of cholesterin in blood and bile). Aschoff's theory of gall-stone formation can be stated briefly, as follows: cholesterin is a normal constituent of the bile and of the blood, its amount therein depending upon the amount of cholesterin in the food. A diet rich in fats and albuminous foods raises the cholesterin content of the bile. There is a distinct cholesterin diathesis. Persons with this diathesis, even upon an ordinary diet, retain their lipoids; an increased cholesterin content of the blood and of the bile results, and sooner or later, a sudden precipitation of the bile cholesterin in the form of gall-stones may occur. Stones are often present in patients with no excess of cholesterin in their blood—the cholesterin shower having occurred at some previous time.

While in the pregnant woman, the presence of hypercholesterinaemia associated with a clinical history of gall-stones, is strongly suggestive of cholelithiasis, a low cholesterin figure does not prove the absence of gall-stones. The cholesterol increase becomes manifest during the latter half of gestation (Slemons and Curtis).

The sedentary life of the pregnant woman and the encroachment of the enlarging pregnant uterus upon the liver and its biliary passages favor bile stasis. The normal obstetric patient eliminates less, during the entire period of gestation, than the normal non-pregnant woman. There is no well recognized line of demarcation between normal and pathologic pregnancy. During pregnancy, the foetal metabolism throws extra work upon the maternal liver; this may determine a temporary impairment of function, an hepatic insufficiency, evidenced by urobilinuria, alimentary glycosuria, moderate icterus, etc. This added stress also predisposes the liver to local changes, evidenced by "the liver of pregnancy," icterus gravidarum, acute yellow atrophy of the liver, etc. The factors enumerated above, taken in connection with the fact that the bile and blood of pregnant women contain more cholesterin than the bile and blood of men or non-pregnant women, explain in part the greater frequency of gall-stones in child-bearing women, explain in part the undeniable etiological influence of pregnancy in gall-stone formation.

## Pathology.

One, two, three, or more biliary calculi may be present in the same patient. From a pregnant patient, Moulden removed 17 biliary calculi, Bosse 26, Graham 80 odd, Roith 84, Finkelstone 86, Brothers 250. In reporting his case, Davis says the calculi were "to numerous to count."

Gall-stones vary in volume, in shape, in location. Bishop says that in his case, the calculi were "like fig-seeds"; Mack, that they were "pea-shaped"; Barillon, "mulberry-shaped"; Peterson, "facetted". In Rissmann's case, the calculus was large, long and elliptical; in Roith's, pigeon egg size. In many of

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the cases, where numerous, the calculi were pea-sized.

Gall-stones usually develop in the gall-bladder, rarely in any other portion of the biliary tract. In their wandering, they may lodge in the hepatic duct, in the cystic duct;—"seventeen stones were scooped out of the dilated cystic duct"—(Moulden); (Later Moulden re-operated his patient, opened the doudenum and removed five small stones from the ampulla of Vater); in the common duct (Ploger), in the duodenal end of the common duct, including the ampulla of Vater (Rissman). "Autopsy showed stones in hepatic duct and in common duct" (Peterson). From a VI-para, 2 months pregnant, Bosse removed one gall-stone from the common duct and twenty-five from the gall-bladder.

Stones may precede the presence of inflammatory changes in the gall-bladder, may be associated with and be the cause or effect of inflammation, slight, moderate, or severe. The inflammation may be limited to the gall-bladder (cholecystitis), to the larger ducts (cholangitis), it may spread to the finer radicles of the biliary tract (diffuse cholangitis), or may be diffuse, involving the gall-bladder and the biliary passages. Cholelithiasis may result from a cholecystitis, and, once established, it becomes a factor in the maintenance of the cholecystitis, in the causation of recurrent attacks of cholecystitis. Inflammation of the gall-bladder and bile ducts is acute or chronic, ulcerative, perforative, or adhesive, catarrhal, phelegmonous, suppurative, or gangrenous. It may be limited to the mucous membrane, or involve part (Davis), or the entire thickness of the gall-bladder wall. In the latter cause, adhesions are very liable to form between the gall-bladder and one or more contiguous organs. The exudate accompanying these inflammations is mucous, serous, sero-fibrinous, or purulent (Graham), in nature. "Gall-bladder in addition to calculi, contained 200 cu. cm. of pus" (Moulden). If perforation or rupture of a gall-bladder occur, the stones therein present may escape, either into the peritoneal cavity, or into a mass of adhesions, or into the liver substance.

Graham, operating for a ruptured gall-bladder, a IV-para, six months pregnant, removed 3 stones from the peritoneal cavity, one from the gall-bladder, and two from the cystic duct. Should the inflamed gall-bladder become adherent to a neighboring viscus, the resulting adhesions may cause functional impairment, or an internal fistula may result, through which the gall-stones may escape; if the gall-bladder become adherent to the abdominal wall, the inflammation may involve the latter, and lead to the formation of an inflammatory mass, from which, ultimately, an external biliary fistula may result.

Amann's patient, a multipara, in the fifth month of pregnancy, noticed a painful mass, supposedly a fibroma, developing in the hepatic region. She went through a normal labor and three months later this painful tumor mass was successfully removed. It had resulted from a pericholecystic inflammatory process extending to and involving the contigous abdominal wall and the appendix vermiformis, and it consisted of a ruptured gall-bladder and an extended gall-stone, an appendix and an inflammatory tissue mass.

Impaction of a stone in the cystic duct may lead to:

1. Dilatation of the gall-bladder, and a resulting: (a) simple hydrops (the wall of the gall-bladder may be greatly thickened; may be paper-thin; may be almost transparent). (b) Empyema.

2. Acute or chronic cholecystitis; catarrhal, serous, sero-fibrinous, suppurative, gangrenous, phlegmonous, ulcerative, perforative, adhesive.

3. Sclerosis of the gall-bladder; atrophic, hypertrophic.

4. Calcification of the gall-bladder.

(Continued on page 157).

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# Western Medical Times

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## PHILOSOPHY—TRANSFORMATION OF FORCE.

When, to the unaided senses, science began to add supplementary senses, in the shape of measuring instruments, then men began to perceive various phenomena that eyes and fingers could not distinguish. Minuter manifestations became appreciable and forms of force that were unknown were rendered measurable. Where forces had apparently ended in nothing and had been supposed to end in nothing, instrumental observations proved, in every instance where effects had been produced, the forces appeared in new and other shapes, that was all. The force displayed in each surrounding change does, in the act of its very expenditure, undergo metamorphosis into an equivalent amount of some other force or forces. Experiment is all the time affirming this. Motion always pre-exists as some other mode of force. Sensations of muscular tensions are the antecedents of our own voluntary acts. In letting fall a relaxed limb we are conscious of a bodily movement requiring no effort, but the effort was exerted in raising the limb to the position whence it fell. In the case of an inanimate body falling to the earth, the forces accumulated by the downward motion are just exactly the equivalent to the force previously expended in the act of elevation. Therefore, motion, when arrested, may and does transform itself, under different circumstances, into heat, electricity, magnetism, light, etc. We may warm our hands by rubbing them

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together; we may set fire to a railway brake by intense friction; we may light detonating powder by percussion, or set on fire a block of wood by a few blows of a steam hammer, and all will be the arising of heat from the cessation of motion. The heat generated is great in proportion as the motion lost is great. And if we diminish motion or friction, we diminish the amount of heat produced. We may rub soiled waste, or use the frictional electrical machine, or allow steam to escape under pressure, or produce friction in any way between heterogeneous bodies, and one of the consequences will be electrical disturbances. Magnetism may result from motion, as in the percussing of iron, or through electrical currents that have been generated by motion, or motion may create light, as in minute fragments struck off by various collisions, or through the electric spark, and motion may be produced by the forces that emanate from motion, as in the revolution of the electrically-driven wheel and through other palpable movements, reproduced by intermediate modes of force that have been themselves originated by motion.

When heat is absorbed without apparent motion, decided changes are produced. The molecular state of glass may be so far changed that a polarized ray of light passing through it becomes visible, which it does not do when the glass is cool, and polished metallic surfaces are so far changed by thermal radiations from objects very close to them as to retain permanent impressions of those objects. Heat may be transformed into electricity. When dissimilar metals, touching each other, are heated at the point of contact, electric currents are produced. Solid, incombustible matter, introduced into a heated gas, as lime into the oxyhydrogen flame, becomes incandescent and exhibits the conversion of heat into light. The production of magnatism by heat, if it cannot be proved to take place directly, may be proved to take place indirectly, through the medium of electricity. While through the same medium may be established the relation of heat and chemical affinity and this is always implied by the marked influence that heat exercises on chemical composition and decomposition.

The transformation of electricity into other modes of force are more clearly demonstrable. Produced by the heterogeneous bodies in contact, electricity, through attractions and repulsions, will at once produce motion in neighboring bodies. A current of electricity generates magnetism in a bar of soft iron, the rotation of a magnet generates a current of electricity. In a battery the play of chemical affinities causes a current of electricity, and in an adjacent cell there may be a current of electricity affecting chemical decomposition. In a conducting wire we may have the transformation of electricity into heat and in the voltaic arc we may see light produced. Atomic arrangement is changed by electricity, the transfer of matter from pole to pole of a battery, the fractures caused by a destructive current, and the formation of crystals are all well known. Electricity may, or may not, be directly generated by a rearrangement of the atoms of matter; but it is, at any rate, indirectly so generated through the mediation of magnetism. Each force is transformed directly or indirectly through the others. From a definite amount of one, certain definite amounts of the other always arise.

## WE SAID THEY WOULD — THEY ARE!

During last September or October, perhaps earlier, when the epidemic of influenza was in its beginning, if influenza it really be, certain men, supposed to be authorities, in certain journals, supposed to be authoritative, told us to meet the symptoms and to exhibit aspirin, other salicylates, or the coal tars of one sort or another for the pain and fever; and for the cough to give some form of opiate. Little or no attention was given to the cause. In fact, that cause was not

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known, exactly. It was the effect that we were told to treat. Some of us followed such instructions and we proceeded to have patients with pneumonia, therefore, our mortality percentages began rolling up to an alarming extent. Then some few of us concluded that those authorities and those journals were all wrong, so that there was nothing logical in any such methods as had been suggested by them. In spite of the fact that some physicians would not admit a state of toxemia and some denied a like state of septicemia, coupled with what was probably an acidosis—for you know those authorities and journals would admit acidosis only in connection with diabetes—a few of us believed that we saw toxemia, septicemia and an acidosis in connection with influenza. We also believed that the depressants were not indicated and that anything which interfered, even in the least, with elimination was rather worse than the depressants. If there were a choice where all were contra-indicated and distinctly baneful.

Some few of us, within a month or two after the epidemic became apparent in this country, completely changed our methods of treatment. We began ignoring the symptoms, other than as signboards which would direct us, and made an attempt to remove the cause, whatever that might be. for we did not have time to discover what it was. We knew that, in other infections, it has been our policy to remove the cause. We also knew that in the majority of infections there was a leeching of the alkalis from the system and we concluded that something like that was the condition in the so-called influenza. We began absolutely crowding eliminating alkalis into our patients and we saw a change in the condition of things. Our patients showed early recovery, without appearance of pneumonia, and that no matter how intense the toxemia might have been in the beginning. We had an idea that those patients showed a complete recovery, we have been watching them since their illness and in the practice of several of us *there has not been a single case of nephritis, or of lung, or of heart sequels!*

But we were openly called damn fools and worse. We were told that our methods were next to worthless, and all because we appeared to forget that our patients had fever, pain and a myriad of other symptoms, none of which we made any seeming endeavor to relieve. Another accusation was, that we did not know influenza when we saw it and were calling every condition by that name and claiming credit which was not ours—that it was an impossibility for any physician to treat any number of cases without having a very considerable mortality to his debit. But we believed we were working upon a firm foundation and we continued, without any deviation, to build as we had begun, firmly. And still we were called fools, for those authorities and authoritative journals continued preaching the depressant and eliminating-locking methods, and they were talkers and writers not to be questioned, you know.

But now, a year later, we are listening to very different stories. Those selfsame authorities and authoritative journals have absolutely about faced—perhaps to save their faces—and are claiming, with quite an amount of originality for themselves, that elimination and the alkaline treatment is *the only* method to pursue. They do not yet, however, admit that they were almost if not completely wrong in the beginning. Nor do they take any cognizance of the fact that. had not the bad treatment recommended by them been employed, perhaps there would have been fewer pneumonias. Nor do they admit that many of the death certificates were the outcome of that so-called scheme of treatment, even though, in all probability, such was the case. They do not admit that they were in the least mistaken, but are now busily engaged in claiming practically all of the credit for the institution of the alkaline, eliminative treatment. Perhaps they have to do this to save their

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skins. Some of those who dubbed us fools, or worse, are turning toward the alkalis and eliminants and endeavoring to let it be known that such was their idea all the while, though they *had* to follow the recommendations of the authorities and authoritative journals. We told these men they would have to come to our way of thinking, and they have done so. We told those authoritative journals that, as had so frequently been the case in days gone by, they were wrong, either in whole or part, and they were. At this late day we do not have to do all the talking ourselves. for there were other "fools" in the country, it seems, for every now and then one of them comes out into the light and has something to say about the *proper* treatment of influenza. They may take up the embarassing subject of malpractice later.

It takes some nerve to refuse to listen to so-called authority or to dispute the authoritative journal; but there are times when, by so doing, much suffering is overcome and many death certificates are unwritten, especially if both authority and organ are ignored, while a physician counsels with himself and uses a little common sense. If he does this and has the nerve to make known his ideas, there comes a time when the so-called authorities and authoritative journals turn around to his way of thinking. We told them just what they would do in this particular instance, and they are doing it, even though the few of us who had some common sense and who employed a logical method of treatment for the so-called influenza are getting little or no credit. We do not care for credit —not for as long as we can save patients from suffering or death. Let the authorities and authoritative journals have the credit. Only we told them what would be what, and it is. We were not authorities or authoritative journals, but just plain, every-day doctors who could see things as they really were, and act logically.

You who leaned hard upon authority may learn a lesson by studying your death certificates and finding out if you can explain away a single one of them to the satisfaction of your inmost conscience. No matter how glibly you explained to the public that trusted you, "how do you account to you?" *Think it over!*

## "THE BUSINESS OF SCIENCE IS TO PREDICT."

When we read that quotation from Herbent Spencer we wondered if he was referring to Christian Science. If so, we wondered what that science might predict. That science predicts one thing; that legislatures must not pass laws compelling the isolation of infectious diseases. It predicts that death is bound to follow in every instance in which a member of the cult becomes really ill. It predicts the doom of disease prevention for three per cent. or more of the people of this country. It predicts. in spite of its name, everything which might be in the least called scientific, for it blunders along, in its phantastic therapeutic theory without one iota of reason. About the only thing it really does predict, is providing the world is well filled with fools, that it will get their money, or know the reason why. Others, the real scientists predict that it is not a science, a religion, a therapeutic agent, or much of anything else than a medium for separating one of those things Barnum loved so well from his money. Perhaps we are a scientist. If so, we predict that maybe this will get a rise out of those scientists who know nothing of any other than the science of "get the money." Anyway that is what we surmise.

## A QUESTION.

As a hypothetical question, we would ask our readers what they would do if pneumonia (so-called), thrombophlebitis, nueritis and other manifestations of toxemia, post-influenza, were shown to be due entirely to lack of elimination,

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and caused or furthered by the use of coal-tars, opiates, etc., that shut up that elimination. What defense could be made to a suit for malpractice against a man who allowed his cases to drift into widespread manifestations of a toxemia, that was being furthered by the so-called treatment that was administered, together with a total lack of any expedient that would tend to help or increase elimination?

## "THE CARE OF PUBLIC WATER SUPPLIES."

"It is not enough for a city to introduce a water supply from a pure source, or to install a good filtration plant for a slightly polluted water or to undertake to purify a contaminated water by chlorin treatment, and stop at that. Any one of these methods may be justified by local conditions, but unless the surroundings of the pure water supply be jealously guarded at all time, and unless the efficacy of purification methods is frequently tested and controlled, there is danger that the supply may come to grief through an "accident" which a not too superhuman sagacity might have prevented. In the case of a water supply, eternal vigilance is the price of safety." J. A. M. A.

We do not think this chestnut is quite accurate. The oldest report at hand is that of the English Commission in 1886, wherein occur these words, "Of all the processes which have been proposed for the purification of sewerage or of water polluted by excrementitious matters, there is not one which is sufficiently effective to allow their use, for dietetic purposes of water which has been so contaminated." This does not effect the truly great and original discovery, that if you want a water supply to remain uncontaminated you must watch it. The only question that remains unanswered is, why did it take the J. A. M. A. nearly a column of space to say so, and what was the need of saying so anyway? We give it up.

## MORE ANCIENT HISTORY.

"This is a time for cultivating the 'open mind' in reference to the true nutritive value of conserved foods. If some dessicated vegetables have proved to be devoid of antiscorbutic efficiency, it must, nevertheless, be admitted that the loss can probably be averted entirely or partially when the conditions which determine it are definitely ascertained. Fruit juices have already been concentrated, and tomatoes have already been dehydrated without becoming impotent in respect to the factor under discussion." J. A. M. A.

This clipping was sent to us with the question, "What does the scurvy editor of the J. A. M. A. mean to tell us? Is it something about canned literature, or what is he trying to do?" We never feel defrauded when we think how we are paying for that sort of editorial writing. We just go to the Surgeon General's index and look up some book of half a century ago and there we are pretty apt to find some very valuable information, so you see, the editorials of the J. A. M. A. do have a value to us; they lead us to study what has been said in long ago. Therefore, we have had a friend go over the period from 1851 to 1861. Especially the volume, The Medical History of the French Fleet, Paris, 1861, page 104. From his report we have made the following abstract, bringing the matter down to the close of the American Civil War.

Massou and Chollet of Paris prepared cauliflowers, carrots, lettuce, peas, etc., dried and pressed together into slabs, these were portable, kept indefinitely, required four or more hours of soaking before cooking, and were to be cooked very slowly indeed. In the Crimean and American wars these slabs proved good and convenient nourishment. But as preventative of scurvy they retarded the outbreak of the disease, they slackened its march, without stopping it altogether and they were liberally supplied to the French ships in the Black Sea during

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1855. In November of that year there were more than 1,000 scorbutics on six vessels in Katcha Roads. Some ships were then sent down to the Bosphorus, with all the scorbutics on board. On their arrival the mess tables were well supplied with salads, fruits, etc. The change for the better, effected by this, was instantaneous and all were, after a few days, restored to perfect health. In the American Army fresh or even dessicated vegetables, as potatoes, onions, etc., proved much more efficacious in the prevention of scurvy than did lemon juice, or even fresh lemons and oranges.

We got all this interesting information because we knew how to read the scurvy editorial. Look at the title (Antiscorbutics) and then look the subject up in a book at least a half century prior to the date of that editorial. It is easy when you know how.

Three things, yea four, have been considered excellent antiscorbutics. Lime juice, light wines, bottled beer and sauerkraut. Oh well. The first has been proven no good, and the other three must not be talked about.

## "HARROWER'S HYPOTHESIS."

In a recent issue of the New York Medical Record (August 16, 1919), Dr. Henry R. Harrower of Los Angeles sets forward an idea which he calls "A Hypothesis of Hormone Hunger." This writer, who is well known to readers of the Western Medical Times, attempts to explain a number of things in relation to the internal secretions, and especially in organotherapy, in an intelligible manner and, since many matters pertaining to physiology must necessarily be presumed and cannot always be positively proved, Harrower theorizes and sets down some opinions which we believe are well founded and worthy of consideration.

After explaining that a number of our most commonly used measures in medicine are dependent for an explanation upon a theory, as for example, Ehrlich's theory of immunity, the so-called "Side-Chain Theory," the writer goes on to explain that since the hormones produced by the glands of internal secretion are carried to remote organs by means of the blood, there necessarily must be some method of selecting these hormones from the blood as it passes through the organs that are influenced. He presumes that when there is a deficiency in the supply of any of these hormones, there naturally would be an accompanying insufficiency on the part of the organs dependent upon these hormones for their stimuli, and that this condition would be manifested by a theoretical condition, which he calls "hormone hunger."

Take, for instance, the relationship between the thyroid and the ovaries, one of the most common and best understood of the denocrine dependencies. If there is a thyroid insufficiency it is most likely that there also will be manifestations of an ovarian insufficiency simulantously and as a result of the remote thyroid trouble. It is presumable that the ovaries are in the habit of selecting from the blood the thyroid hormones which are used to encourage ovarian function. If then, the ovaries cannot get their normal supply of thyroid hormones they begin to function abnormally and are in a state of need or "hunger" for the missing hormones.

This seems to be a perfectly rational deduction, and the interesting part is how Harrower relates this to the administration of gland extracts. For instance, in the above condition of minor hypothyroidism, which is usually associated with amenorrhea and ovarian difficulties, it is believed that there is very commonly an associated thyro-ovarian insufficiency. If then, the ovaries are awaiting with interest the missing supply of the thyroid hormones, and a thyroid preparation is given to such a patient it will be taken up with greater rapidity than though the ovaries were not in need of this particular substance, and if pluriglandular extracts are given

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to patients suffering with endocrine disturbances the body has physiological sense enough to select from that which is given to it, and which reaches these organs through the blood of those various substances, that it has need of *and in proportion as it needs them.* Hence, pluriglandular therapy, instead of being "shotgun procedure," is based upon as sound a reasoning as our methods for combating infection and raising immunity. as for example, the use of diphtheria antitoxin.

Doctor Harrower has done much to stimulate an interest in the internal secretions and the series of articles which he published in the "Times" some years ago is still remembered by many readers. This new hypothesis bids fair to become a routine consideration by the profession and especially helpful to those physicians who have not quite understood why pluriglandular therapy was so much better than the administration of single gland extracts alone.

# BOOK REVIEWS

NOTICE:—It will be the pleasure of the WESTERN MEDICAL TIMES to furnish any book, reviewed in this department, to its readers at the publisher's price, delivery prepaid. If any single order covers two books, the purchaser will be given in addition, a year's subscription to the WESTERN MEDICAL TIMES, providing the publisher's price for the two is $5. or more. If you desire any one of the books priced at $1., you may have it absolutely free if you will send us $2. to cover a subscription of one year for the TIMES. Address your orders to the Advertising Manager, 138 North Center Street, Reno Nevada.

RULES FOR RECOVERY FROM PULMONARY TUBERCULOSIS. A Layman's Handbook of Treatment. By Lawrason Brown, M. D. Third Edition, Thoroughly Revised. 192 pages. Cloth, price $1.50 net. Philadelphia and New York: Lea & Febiger, Publishers, 1919.

Time was when the giving of such a book to the layman would have been considered a professional sin. Information, other than of a limited sort, was not to be given to the patient. But in the treatment of tuberculosis it has been found that the patient must be practically re-educated, or at least in so far as the conduct of this particular infection is concerned. Properly conducted tuberculosis sanitariums might really be called schools, for in them as much attention is given to the education as to how to best care for himself, as to the direct treatment of the disease. In fact, the treatment consists very largely of the proper care of the individual, rather than in drugging him. When the patient receives his discharge from such an institution he is not, as a rule, cured, in the actual acceptance of that word, but is rather an "arrest," and it is necessary, should he continue in such condition, to know how best to care for himself. He does not really require the continual attention of the physician, but he does need a considerable knowledge of the disease and how best to control it. Herein steps this book by Brown, which gives the patient just enough information, and no more, about how to conduct himself, that he may remain among the class of "arrests" and become a useful citizen, instead of a chronic invalid and consequently a burden to society. That this work has passed through two editions and into the third shows that it has its place. It is not a something which will make a "half-baked" doctor out of the patient, for it gives him nothing more or less than the information necessary for his good conduct during his days of recovery from the disease. Because of this the physician must not feel that any risk at all is attendant to the placing this book in the hands of the tuberculous patient. It may save the doctor much time, for it answers many questions which would undoubtedly be asked by

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the patient. We know of at least one other book for the direction of the patient suffering from a chronic disease and it is possible that others will appear in time to come.

GERIATRICS. A treatise on Senile Conditions, Diseases of Advanced Life, and Care of the Aged. By Malford W. Thewlis, M. D., Associate Editor, Medical Review of Reviews. With Introductions by A. Jacobi, M. D., LL. D., and I. L. Nascher, M. D. 250 pages, illustrated. Cloth, price $3.00 net. St. Louis: C. V. Mosby Company, Publishers. 1919.

Until recently we have been giving but little or no attention to the fact that, as man grows older, certain changes take place which make him different, in many ways than he was during middle or earlier life. We have, for a considerable length of time, recognized the fact that the infant required a different attention than that given the adult, if we would attain success in our attempts to treat him. It is being found that the same is true in our attention to those in later life, that is, subsequent to the end of the fourth decade. We cannot put the aged to bed and anticipate a recovery from numerous complaints, but, as the book under consideration says, gain much if we keep our aged patients out of bed. We see many cases of nephritis in those of 45 or over and many of us would change the mode of living to such an extent as to starve such patients or to otherwise make their lives a burden. The author points out the fact that perhaps moderation would be better than obliteration and in this we can agree with him, for it is an easy matter to starve a patient, and once in that condition we may have something worse than the underlying condition with which to deal. Many individuals have established certain habits and if these are wholly interfered with in later life we may have all sorts of things with which to contend, and this is another point brought forward by the author. We have seen a blood pressure increased through the withdrawal of certain items of food or the after dinner and brought back almost, if not quite to normal when those things have been restored and allowed in moderation.

The author also points to the fact that senility is not a pathologic, but rather a physiologic condition and should be so considered, as is childhood. He emphasizes the fact that we should not treat our old patients as do we those in early adult or middle life, but should take into consideration the many changes which take place after the peak of life has been passed. He gives attention to specific condition with which the aged are afflicted and paves the way to a better treatment thereof. This is a book which every internist should have and study with more than ordinary care, for if the proper attention is given the aged and they receive proper treatment, the sort which will tend to give them ease and a longer span of life, then will the reputation of the doctor be enhanced.

PULMONARY TUBERCULOSIS. By Maurice Fishberg, M. D., Clinical Professor of Medicine, New York University and Bellevue Hospital Medical College; Attending Physician, Montefiore Home and Hospital for Chronic Diseases, New York. Second Edition, Revised and Enlarged. 744 pages, Illustrated with 100 Engravings and 25 Plates. Cloth, price $6.50 net. Philadelphia and New York: Lea & Febiger, Publishers, 1919.

While tuberculosis is always given more or less consideration in all the works on general practice, it is a something which requires more attention than can be given it in that manner. There are so many details to be considered that any sort, or in fact, any rather long epitome of the subject is not sufficient. Hence the reason for the work now before us. It does go into the details, and that very thoroughly, of all the aspects of the subject. If nothing else, it leads up to a better diagnosis and that is *the* thing of paramount importance in this disease, for the early

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recognition of a tuberculous condition not infrequently leads up to a likewise early "arrest," if not a seeming cure. And this author gives us a sufficiency of detail relative to this portion of the subject. If we desire to give our tuberculous patients treatment, Fishberg gives us the latest ideas relative thereto, and they are ideas upon which we may depend. We not infrequently overlook the complications of tuberculosis and the author calls our particular attention to this phase of the subject.

In his preface he calls attention to a number of things which are of more than passing interest and which we believe have a place in a review of the book. He says: "An experience of over twenty years with the tuberculosis problems in New York City has convinced the author that: (1) The physician can, and should, do more than recognize phthisis in its earliest or pretuberculous stage and at once consign the patient to a sanatorium. (2) That "incipient" does not always mean *curable* tuberculosis, and conversely, that "advanced" disease does not necessarily indicate a hopeless outlook. (3) That institutional treatment is not the only effective method of handling the phthisical patient. (4) If all tuberculous persons in this country would consent to hospitalization, the available institutions would hardly accommodate ten per cent of eligible patients. (5) Even those treated in sanatoriums must be cared for by their family physicians before admission and after discharge. (6) Careful home treatment is productive of practically the same immediate and ultimate results as institutional treatment, and is less costly to the patient and to the community." If you will stop after reading this abstract and think for just a moment, you will conclude, very probably, that the general practitioner has a greater share in the treatment of tuberculosis than has anyone else. It is very apparent that such a man must be as well grounded in his knowledge of the disease as is the specialist, for both before and after the latter does his work must the family physician handle the case and it is upon him that the burden of success, or reverse, depends during the latter days. Consequently, this monograph is one which is of paramount importance to the general practitioner as well as to the tuberculosis specialist.

SYMPTOMS OF VISCERAL DISEASE. A Study of the Vegetative Nervous System in Its Relationship to Clinical Medicine. By Francis Marion Pottenger, A. M., M. D., LL. D., F. A. C. P., Medical Director, Pottenger Sanatorium for Diseases of the Lungs and Throat, Monrovia, California; Professor of Diseases of the Chest, College of Physicians and Surgeons, Medical Department, University of Southern California, Los Angeles, California. 328 pages, with 86 text illustrations and 9 color plates. Cloth, price $4.00 net. St. Louis: C. V. Mosby Company, Publishers, 1919.

Pottenger has, for some time, been called a specialist, but in this book he says, "Though I have devoted myself to the study of diseases of the chest—a so-called 'specialty'—for more than twenty years, experience has led me to see that such a thing as a medical specialty in the accepted sense of the term, cannot exist. Diseases can not be divided into those of this or that organ; for the human body is a unit. One part can not be diseased without affecting other parts. No organ can be understood except in its relationship to other organs and to the body as a whole." In another place he says, "There is no study today that offers us greater hope for the future practice of medicine than the study of the individual who has the disease and the means by which the disease expresses itself in his tissues, secretions and excretions—the study of pathologic physiology or 'functional pathology' as it is often called." And he devotes entire pages to "There is a patient who has the disease, as well as the disease which has the patient."

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These quotations give us much food for thought and if we bear them in mind and treat the patient, we believe, upon a basis of a rather considerable observation, that we will come more nearer success than if we give all our attention to the disease and none to the patient. No two patients react absolutely alike to any particular disease. Consequently, to succeed, we must take into consideration individual peculiarities.

In this book Pottenger gives particular attention to the vegetative nervous system, in its relation to symptoms of visceral disease, and leads up such consideration in a way which gives the reader a remarkably clear conception of the subject. In the past we have been giving too much attention to the cerebro-spinal, or voluntary nervous system, and not enough to the sympathetic and vegetative systems. The latter exert a control over functions to almost, if not quite as great an extent, as does the former, and we must carry them in mind if we would know the exact condition of our patient, else we will fall short of being good clinicians and will not meet with the success we should.

If, a few years ago, any man had the temerity to so much as hint that the sympathetic reflexes had much to do with diagnosis of diseases of the viscera, that man was very liable to be the object of ridicule, if not scorn, and if he so much as hinted that those reflexes could be employed in righting wrong visceral function, that man was surely scorned. But things have changed and it is getting to be known that both the sympathetic and vegetative nervous systems are to be taken into accord, and those of the individual patient, as Pottenger says, given exclusive attention. It is very probable, as we come to understand these non-voluntary systems, that there will be marked improvement in both diagnosis and treatment of many, if not all, visceral diseases. Pottenger, with some other authors, are paving the way and we should study closely all they have to say. We must also quit thinking that any one part of the body, or any one organ thereof, can be abnormal alone and without having a general effect. So we say, read this book closely and perhaps, like the author, you may get a different viewpoint of many things and that you will come to give your patients much better treatment, with incident better results.

PRINCIPLES AND PRACTICE OF INFANT FEEDING, by Julius H. Hess, M.D., Professor and Head of the Department of Pediatrics, University of Illinois College of Medicine; Chief of Pediatric Staff, Cook County Hospital; etc. 338 pages, illustrated. Cloth. Philadeplhia: F. A. Davis Company, Publishers, 1918.

The majority of books on the subject of diet are based very largely upon theory and not clinical experience. In the work now before us we see that the author reverses matters to a very considerable extent and in that way gives us a practical basis upon which to form opinions and to be directed in the matter of infant feeding. Not only has he done this, but in addition the salient points are, in the main, the only ones given consideration, the matter of profound discussion of theories being left to others. This also adds to the practical value of the book, and especially so to the busy practitioner, he who wants the most of the nut, and that without extraneous matter. The book is arranged in four parts, dealing with general considerations, nursing, artificial feeding, nutritional disturbances in artificially fed babies, and an appendix which cares for many miscellaneous subjects. In each section the subject dealt with is given full discussion. Where necessary to give a better idea of technic or to otherwise elucidate the text, illustrations are given. This is a good book for the busy practitioner who does not have the time or desire to wade through a lot of theory and other than absolutely necessary words.

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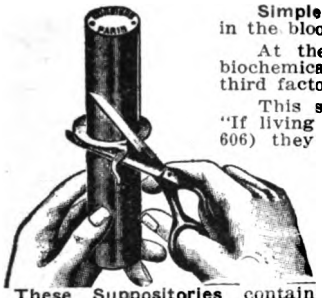

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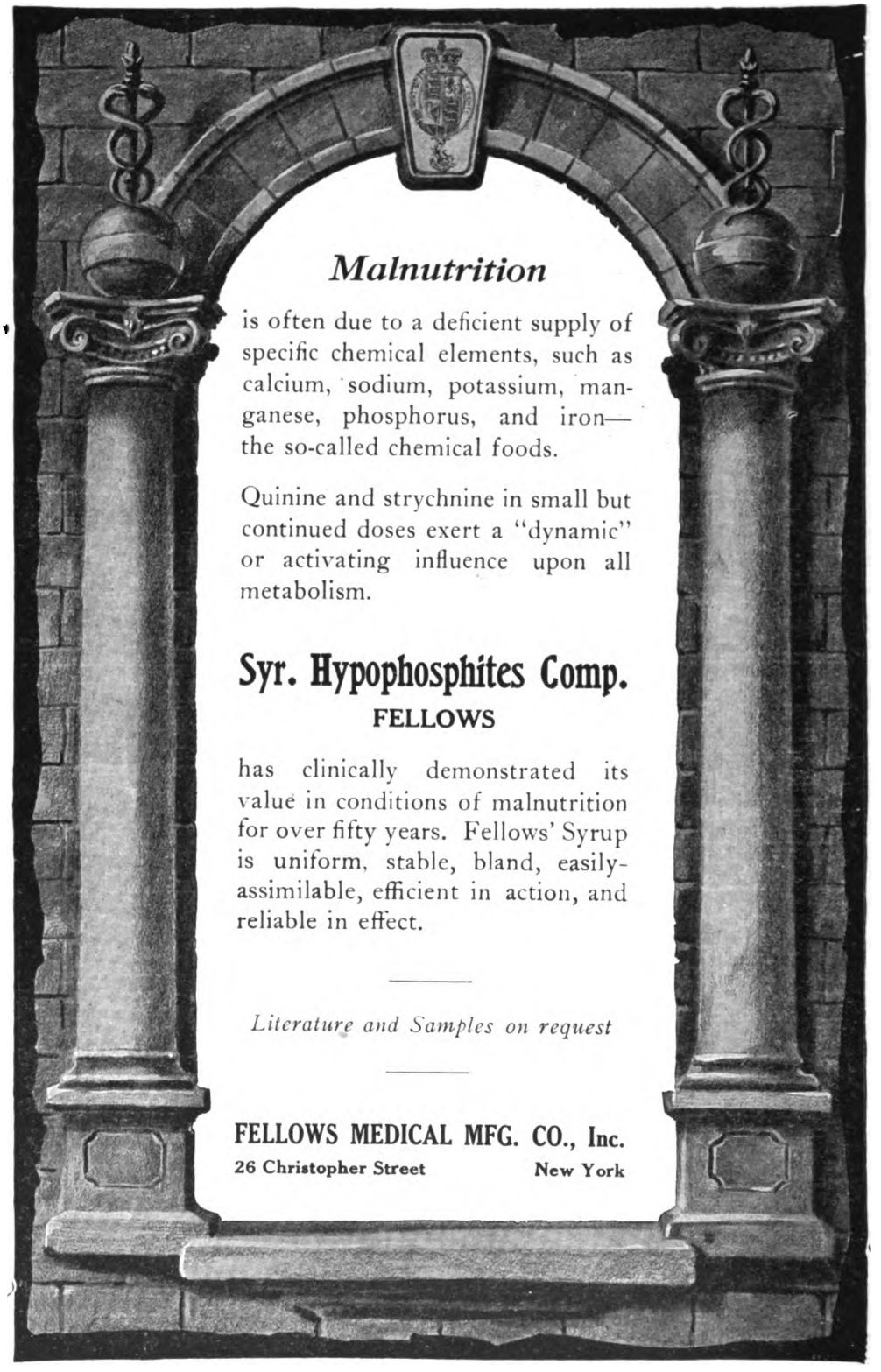


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# DEPARTMENT OF NURSING.

E. MILDRED DAVIS, A.B., R.N., Editor.
Superintendent Edgecombe General Hospital, Tarboro, North Carolina.

TYPHUS MENACING THE WORLD. (*Abstracted from "The Trained Nurse and Hospital Review," August,* 1919.)

The League of Red Cross Societies of the World is waging a war on typhus to prevent its spreading from Poland, where one hundred thousand inhabitants are afflicted with the disease. The other countries of eastern and southeastern Europe are in danger of such epidemics, as reports show that thousands have died from the lack of medical care. Conditions in Hungary and other sections, due to the appearance of typhus are such as to be considered a menace to the rest of the world.

The inhabitants of these countries are suffering from the shock of war and undernourishment, which will serve as a predisposing cause for epidemics of cholera, in addition to the rapid spread of typhus. The League of Red Cross Societies will endeavor to impress upon the government of these various countries the necessity for immediate and effective action, as a vigorous campaign will be required to control such epidemics before the cold weather and privations increase the extent of human suffering.

WHAT THE WAR HAS TAUGHT US ABOUT NURSING EDUCATION. (*Abstracted from "The American Journal of Nursing," August,* 1919.)

The war has been worth its price to the nursing world if it has removed the selfishness and petty jealousies, which are common features of our American life where luxury, abundance and needless waste are prevalent. Our patriotism must include good fellowship, helpfulness and consideration for those with whom we come in contact, also a willingness to accept conditions, which are conducive to the best results for the greatest number.

This attitude should be prevalent both in times of war and peace.

NURSING IN ANCIENT TIMES. (*Abstracted from "The Pacific Coast Journal of Nursing," August,* 1919.)

Disease and helplessness has always existed in some form. Nursing is one of the oldest arts. A certain type of nursing skill is prevalent among the savages and more intelligent animals, which has been derived from instinct.

The first hospitals were connected with places of worship. The sick people of Egypt took refuge in the temple of the gods. The Persians conducted houses for the poor and infirm who were waited on by slave boys and girls.

Medical specialists were appointed to care for sick travelers in Hindoo villages, where crude types of hospitals were provided.

The Vedas or sacred books of India contain instructions in the practice of medicine, major and minor surgery, bandaging, poisons, their antidotes and discussions of nervous diseases. They also contain instruction in hygiene and state that disease is preventable. Moses had a camp of more than a million people. He has been recorded as a great physician. The Temple of Asculapius in Greece resembled in many respects features of our modern sanitoria.

Hipprocrates taught that disease was the cause of violation of natural laws, also that insanity was a disease of the brain and not a mysterious demon. Julius Caesar recognized teachers of hygiene and conducted a medical service in the army. The ancient Aztecs had well organized hospitals. Many nursing utensils were found in Switzerland among Roman ruins.

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MEDICAL MISSIONARY WORK IN AFRICA. (*Abstracted from "The Public Health Nurse."*)

An African woman with a broken hip crawled through forests and swamps for two whole days, in order to reach a medical mission. The idea that all human life is valuable is a new one for the inhabitants of Africa. Old women are literally thrown out of the huts and left to care for themselves. The teaching of Christian missionaries has gradually penetrated into the dark recesses of the African mind. The Methodist Missionary Centenary is now raising $105,000,000 for the increase of medical work in Africa and throughout the world.

THE GROWTH OF THE HOSPITAL IDEA. (*Abstracted from "The Modern Hospital," August,* 1919.)

Less than fifty years ago there were in the United States only 149 hospitals; today there are nearly 9,100, which is an increase of nearly 6,000 per cent. in the number of such institutions. In 1873 the total bed capacity was 35,453. The total bed capacity this year is approximately 869,000, over 1,000 per cent. increase.

Nearly two billion dollars have been invested in these hospitals—according to a rough estimate. The annual expenditures for upkeep, repair, improvements, additions, etc., amount to about three-quarters of a billion dollars.

The average number of beds in each institution was 238 in 1873, and slightly over 98 this year. The large hospitals have increased in size. Mount Sinai of New York could accommodate 60 patients in 1868. Its present capacity is 500. Pennsylvania Hospital had 155 patients in 1867. It now takes care of 315.

The increase in the number of small hospitals has been enormous and the vast majority of hospitals in the country are under one hundred beds in capacity.

REPORT OF THE ARMY SCHOOL OF NURSING. (*Abstracted from "The American Journal of Nursing," August,* 1919.)

At the close of the fiscal year the Army School of Nursing records an enrollment of 741 students, 573 on duty in fourteen military hospitals and 168 in the affiliating civil schools.

The decreasing service with closing of camps has necessitated shifting of training school units. The generous response of the Civil Hospitals to requests for affiliating courses has adequately met the needs of the students for experience with women and children.

THE DOUGHBOY. (*Abstracted from "The Red Cross Magazine," August,* 1919.)

He has been nearest to us from the start. He has amazed us, ennobled and in turn humbled us. We saw in him, not only the power and vigor of our country, but its doubted capacity for taking training and submitting to control.

He would march day after day, and go into battle defiant of danger, uncomplaining, unselfish, cheerful. When at leisure he would resent everything that affected him adversely, from the high command to the Frenchman he was cheerfully offering his life to help. His grouch was characteristic. He had the heart of a child, would participate in taking a city and ten minutes later hunt for souvenirs. He fought his way through the Argonne and wakened the morning after the Armistice, dreaming of home.

He hated "carrying on," but knew it was his duty and persevered. We have pitied him again and again. He is strong, childlike, enduring, yet long-suffering. A look in his eyes seemed to be higher, than anything in ourselves.

A famous French surgeon—silent in nature—said to an American nurse, in reference to the doughboys: "There is something in them I have never seen in men or women before, something in their eyes. I don't know whether it's your Monroe Doctrine, or President Wilson, or God Almighty, but they have something that other men have not." What the doctor saw was the soul of America.

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# Gall-Stone Disease Complicating Pregnancy.

(Continued from page 144)

If the calculus becomes impacted in the common duct there may result any of the fore-mentioned complications or a distention of the common duct (Bosse), with or without a cholangitis.

Inflammation in the common duct involving contiguous tissues may produce a thrombo-phlebilis and thus interfere with the circulation through the liver, may extend to the head of the pancreas, changing it to a firm tumor (Finkelstone). In his case, Max Neu found the gall-bladder shrunken, the common duct widened and bound down by broad inflammatory adhesions to the duodenum.

## Symptoms.

Moynihan, Mayo, and many other careful clinical observers are of the opinion that gall-stones do not exist without producing symptoms; they state that the vague term "indigestion" is used variously by patients to indicate all the several forms of distress which are the forerunners of a crisis of acute biliary colic. Parks claims that the statement "may not cause symptoms" is an admission of inability to recognize incipient symptoms.

Gall-stones produce symptoms by irritation, by migration, by obstruction. Pain and tenderness are most constant and most important symptoms of cholelithiasis, being described by the patients under a variety of terms: (a) discomfort (Roith), (b) deep soreness (Villard), (c) biliousness, (d) dyspepsia, (e) gastric distress (Barillon), (f) neuralgia. The pain, usually limited to the region of the gall-bladder, radiates quite often to the epigastrium, subscapular region, neck, shoulders, arms, etc. "Pain in hepatic region" (Bosse). "Pain in hypochondrium, extending to right shoulder" (Davis). "Repeated attacks of pain under the right scapula, extending around to the epigastrium" (Bishop). "Lancinating pain in epigastrium radiating to back under the shoulder blade" (Moulden). "Sudden attack of pain in region of navel" (Roith). "Pain in right hypochondrium, radiating to shoulder and to back" (Villard).

What causes this pain? Various factors, chief among which are: (a) the calculi themselves; (b) the inflammation present in the gall-bladder and in the biliary tracts; (c) adhesions of inflammatory origin binding the gall-bladder cystic or common duct to adjacent organs. These adhesions can also determine severe functional disturbances of stomach and intestines.

"The most characteristic and constant sign of gall-bladder hypersensitiveness is the inability of the patient to take a full inspiration when the physician's fingers are hooked up deep beneath the right costal arch below the hepatic margin. The diaphragm forces the liver down until the sensitive gall-bladder reaches the examining fingers, when the inspiration suddenly ceases as though it had been shut off. I have never found this sign absent in a case of calculus or in infectious cases of gall-bladder disease" (Murphy).

The localized tenderness and the rigidity of the abdominal wall may be so marked that satisfactory palpation is difficult, impossible. Other factors, thick abdominal wall, meteorism, deep-seated location of the gall-bladder, may prevent the detection of the latter. In a few cases, however, a gall-bladder distended by calculi (Peterson, Roith), or by fluid, mucous, purulent, etc, in nature, or by both calculi and fluid (Villard), can easily be mapped out. A gall-bladder contracted by inflammation does not give rise to a palpable tumor.

## Jaundice.

In the diagnosis of gall-stone disease, too much significance has been attached to the symptom jaundice. It is an important sign, but is not to be considered

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essential to diagnosis: like hemorrhage in duodenal ulcer, it ought not to be waited for. Jaundice may not occur at all (Heineck, Finkelstone), it may be inconspicuous, it may be late, it may be inconstant. In some cases each attack of gall-stone colic is followed by transient jaundice (Bishop). The presence of jaundice was definitely recorded in twenty of our thirty cases. The jaundice was accompanied by its usual concomitant manifestations, digestive disturbances (Villard), beer-brown urine (Bosse, Davis, etc.), clay-colored stools (Ploger, Rissman, etc.).

In diseases of the biliary passages, icterus is of two forms: it is of inflammatory or of lithogenous origin. The cause of the first is an inflammatory swelling of the mucous membrane of the biliary passages (Korte, Barillon). In gall-bladder infections, the swelling of the mucous membrane may extend and involve the common and hepatic ducts and thereby obstruct the bile flow. The mechanical occlusions, partial or complete, of the common duct by a calculus, causes lithogenous jaundice. Icterus is frequently due to both inflammatory and calculous obstruction.

As long as a calculus remains in the gall-bladder, or in the cystic duct, jaundice is not likely to appear. In eleven of the cases in which jaundice was observed, there was present, with or without other calculi, a common duct stone (Bosse, 3 cases; Heineck, Mack, 2; Ploger, Rissman, McNee, Roith, 2 cases). In a lesser number of cases, the provocative cause was the compression of the common duct or of the extra-hepatic part of the hepatic duct by a large stone in the cystic duct, by swollen lymph-glands, by inflammatory exudates, by adhesions compressing or kinking the ducts, etc.

### Colic.

As stated before, gall-stones cause pain through the irritation, infection, and inflammation that result from their impaction in the neck of the gall-bladder or in any part of the bile-ducts. They also cause a characteristic lancinating pain, agonizing in nature, by meandering through the bile ducts for a shorter or longer distance and setting up a spasm of the muscular wall behind the stone. This latter pain is intense, is designated as biliary colic, and is usually accompanied by chills, frequent vomiting, white lard-like stools, and bile-stained urine.

Gall-stone colic can be caused by: 1. An adherent, inflamed gall-bladder containing calculi (Finkelstone), or having contained calculi. 2. An inflamed gall-bladder distended by fluid or stones, its cystic duct being occluded by inflammation or by a calculus (Barillon), or calculi. 3. The entrance into, or attempted passage through some part of the ducts of a calculus, altered bile, mucus or other irritating foreign body. 4. The transit of a stone through the bile passages. 5. Impaction of a stone in a dilated inflamed common duct or in any of its tributaries (Bosse, two cases; Ploger, Rissman). All the cases with stone in the common duct gave a history of biliary colic.

### Diagnosis.

If the symptoms are typical, the diagnosis of gall-stone disease is easy. In addition to recognizing the condition of cholelithiasis, the surgeon should, if possible, determine the exact location of the calculi and note what pathological conditions or changes may be present. Digestive disturbances are undoubtedly the cause of most failures to recognize early gall-bladder symptoms. Cholecystitis or cholelithiasis, owing to their reflex symptoms, are often mistaken for diseases of the stomach.

By keeping in mind that much of the dyspepsia of pregnancy is from unrecognized gall-stone disease, and that gastric disturbances in pregnancy should receive careful consideration and not be regarded simply as concomitant features of the pregnant state, many diagnostic er-

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rors will be avoided. The discovery of calculi in the feces is evidence of their previous existence. It is not proof that any remain. X-ray pictures taken and interpreted by expert roentgenologists are of paramount importance in the diagnosis of biliary renal or ureteral calculi. The absence of any roentgenographic shadow does not prove the absence of gall-stones. "X-ray revealed outline of gall-bladler filled with stones" (Peterson).

Things of importance to arrive at a diagnosis are: 1. An exact history, including the record of previous attacks of hepatic colic; "Previous attacks of biliary colic" (Rissman, Ploger). "Gave a history of having had similar attacks during her previous pregnancies" (Davis). "Previous attacks biliary colic. Three years ago, first attack of pain in hepatic region. Since then, recurrent attacks" (Bosse). 2. The Location of the tenderness and pain and the nature and radiating character of the latter. 3. A thorough examination including a careful inspection and palpation of the abdomen, especially of the hypochondriac region. 4. The exclusion of such pathological conditions as simulate gall-stone disease; lead colic, renal colic, duodenal ulcer, Nephrolithiasis, chronic appendicitis, movable kidney, infection of the genital tract. Cholecystitis is frequently diagnosed appendicitis and vice versa. Gall-stone disease and appendicitis are frequently present in the same patient. Cholelithiasis may co-exist with other pathological states.

### Treatment.

In cholelithiasis, two urgent indications are present: 1. The removal of the calculus or calculi present in the gall-bladder or ducts. 2. The cure of the inflamed condition of the bile tracts. It is agreed that gall-stones should be removed. No one nowadays treats a vesical calculus by other procedures than operation. The spontaneous passage of a calculus through the intestine may bring about a cure, but other calculi usually remain in the gall-bladder and any one of them may set up an inflammatory attack. In gall-stone disease, medical treatment is purely prophylactic, merely palliative. It is not curative. Moynihan says, "I hold that once a diagnosis has been made, operation is always indicated unless there are grave reasons forbidding resort to surgery. Reasons should not be asked to support a plea for operation, but to justify any other course than this."

The earlier the patients are operated, the more prompt the relief; the more numerous the complete recoveries. With advancing pregnancy, the technical difficulties incident to operations on the gall-bladder and bile ducts increase. In these cases, we never use chloroform as a general anaesthetic; we are afraid of its action on the liver cells. We have been well pleased with the use of hard, round cushion placed transversely beneath the dorso-lumbar region. One of three operations, choledochotomy, cholecystostomy, or cholecystectomy is usually performed, the type of operation selected depending, in the individual case, upon the location of the calculi and upon the nature of the associated complications. In the extraction of calculi from the bile ducts, injury of the duct and wall should be avoided. Rather than risk this, the incision in the duct should be prolonged.

If the calculus or calculi are in the hepatic or common bile duct, their removal is effected by incising the common duct; drainage is instituted through this incision. (Hepatic drainage.) Recovery followed in the three cases (Bosse, two; Ploger, one), in which this was done. Rissman successfully removed a calculus from the duodenal end of the common duct by incising the anterior and posterior duodenal wall. In the cases in which stones were present in the gall-bladder and in the common duct, the performance of a cholecystostomy and a choledochotomy at

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one sitting, plus the institution of hepatic drainage gave satisfactory results. (Bosse, Mack, Neu, etc.) Roith, in a case in which stones were present in the common duct, removed the gall-bladder, then incised the common duct and drained through the latter. Recovery. Davis, in a patient seven months pregnant, performed a cholecystectomy. Forty-five days later, the uterus was dilated manually and a premature fetus was extracted. In all of the other cases, a cholecystostomy was performed. Finkelstone in his case did a cholecystostomy; one year later he performed a cholecystectomy. In some cases, owing to the coexistence of other pathological states, additional operative work was done. There were two deaths (Graham, Peterson), in the series of cases under consideration. In Graham's case, the patient, at time of operation, had a general peritonitis from her ruptured gall-bladder. In Peterson's case, there was considerable blood oozing (the coagulation time of the blood was seven minutes), and there developed an acute post-operative suppression of urine. In those cases of gall-stone disease in which other pathological states were present, appropriate additional operations were performed. Erdmann, in his case, did a cholecystostomy and an appendectomy. Brothers, in one case, removed 205 gall-stones, exsected one inch of the left tube to induce sterility, and did a right salpingo-oophorectomy for an existing right tubal gestation.

There is a wide difference of opinion as to which operation, cholecystotomy or cholecystectomy, is indicated in gall-stone disease. Some operators almost invariably perform a cholecystostomy; others equally competent believe that cholecystectomy is the most universally applicable operation for the cure of cholelithiasis. Others do as Kumnel, who says, "We remove the gall-bladder when we must, we save it when we can." It is well to select the operation which can be performed in the shortest possible time consistent with the existing conditions of the biliary passages. After cholecystectomy, redrainage of the biliary passages may prove extremely difficult and dangerous. The advocates of cholecystectomy claim that the removal of the organ takes away the possibility of stones being left behind, being reformed, that it removed an inflamed organ.

It is agreed that cholecystectomy is attended with more technical difficulties than cholecystostomy. It requires greater care to avoid injury to the bowels, vessels and the main bile ducts. It is wiser to choose the safer operation until the technic of the more complicated one has been mastered.

Cholecystostomy is the operation of election:

1. Whenever the patient's condition is so bad that the difficulties attending a cholecystectomy render its performance unsafe.

2. When the gall-bladder is not seriuosly damaged and when the cystic duct is not ulcerated or narrowed by stricture. It is believed that the gall-bladder has some other function than that of a mere receptacle of bile.

3. When the common duct is strictured.

4. If jaundice and pancreatitis complicate the gall-stone disease.

Cholecystectomy is indicated:

1. For very thick, acutely inflamed or gangrenous gall-bladders in which a stone is impacted in the cystic duct.

2. For chronically thickened gall-bladders. A thick walled gall-bladder which has become functionless should always be removed. When the gall-bladder becomes thickened and hardened from long continued inflammation, it is manifestly impossible that it should dilate no matter what obstruction there may be in the common duct.

3. For large gall-bladders distended with clear fluid and resulting from the impaction of a stone in the cystic duct.

4. For the "strawberry" gall-blad-

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der (chronic thickening with ulceration).

5. For a calculous gall-bladder adherent to the stomach, intestine, or omentum.

6. When the walls of the gall-bladder are so modified by disease that neither the storage nor the expulsion of bile is possible.

## Summary.

1. Gall-stone disease occurs with far greater frequency in women than in men; with far greater frequency in women that have borne children than in women that have remained sterile. Its period of greatest incidence is the child-bearing period.

2. Gall-stone disease, alone or associated with one or more other related or non-related pathological states, not uncommonly complicates a pregnancy otherwise normal or abnormal.

3. The first manifestations of cholelithiasis may date from the existing gestation or from a previous pregnancy; may precede, coincide with or follow an abortion or premature labor, accidental or induced.

4. All conditions that are associated with, that favor or cause; (a) bile stasis; (b) inflammatory or degenerative changes involving the gall-bladder or bile tracts; (c) pathological alterations in the composition of the bile, such as hypercholesterinaemia, etc., predispose to gall-stone disease.

5. Pregnancy is an important etiological factor in the causation of cholelithiasis.

6. The pathology of gall-stone disease complicating pregnancy is the pathology of gall-stone disease occuring in the non-pregnant. There may be present: (a) an inflammation of the gall-bladder or bile ducts in which one, two, or many calculi are lodged, or impacted; (b) a distention of the gall-bladder or bile ducts by mucus, pus, or calculi; (c) a pericholecystic inflammation, calculous in origin, leading to adhesion formation, to fistula formation, etc., and corresponding disturbances of function; (d) changes in the liver; (e) changes in the pancreas.

7. Some of the symptoms of gall-stone disease are due to the irritation inherent to the presence of gall-stones, to their migration through, or impaction in the bile ducts or neck of the gall-bladder. Other symptoms are due to the concomitant inflammation of the gall-bladder, bile ducts and neighboring organs, causative of or resulting from the presence of calculi.

8. Rupture of a gall-bladder distended by calculi, by fluid, mucous or purulent in nature, can occur during gestation or during or immediately after labor.

9. In the differential diagnosis of this condition one should bear in mind:

(a) that not infrequently gall-stone disease originates during or may complicate pregnancy;

(b) that cholelithiasis and cholecystitis owing to their reflex symptoms are often mistaken for gastric disease;

(c) that appendicitis and gall-stone disease frequently co-exist;

(d) that digestive disturbances associated with acute pain and tenderness in the right hypochondriac region, with or without jaundice, with or without symptoms of biliary colic are in themselves ample justification for operative exploration of the gall-bladder and ducts.

10. Cholelithiasis is a surgical disease; it calls for operative relief. Medical measures in this disease are merely palliative; appropriate surgical measures are curative.

11. Gall-stone disease in itself is never an indication for the artificial termination of pregnancy.

12. Whenever, for some cause or other, the abdomen is opened in woman of the child-bearing age or past the child-bearing period, the gall-bladder and larger bile ducts should be examined if it can be done:—(a) without or with only slight traumatizing of the tissues; (b) without exposing the patient to too

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much additional risk; (c) without contaminating clean peritoneum. Should the patient give a history of chronic digestive disturbances, the indication is absolute.

13. Women exposed to pregnancy, suffering from calculous cholecystitis, or any other form of gall-stone disease, should be operated, the calculi removed, and the gall-bladder drained.

14. Pregnancy does not contra-indicate operations upon the gall-bladder or bile tracts. Peterson reported only three miscarriages in 23 reported operated cases. In only one (Roith) of the cases which we considered, did abortion follow the operation.

15. It has been repeatedly demonstrated that the operative relief and cure of cholelithiasis does not unfavorably influence gestation, does not unfavorably influence parturition. Icterus, whether acute or chronic, is a constant menace to the foetus.

16. Early operation is now, in proper hands, a safe procedure. It is an effectual cure of the symptoms produced by gall-stones; it has a low mortality and guarantees against serious complications in the future.

17. Cholecystostomy, cholecystectomy, and choledochotomy have been successfully performed upon pregnant women for the relief of gall-stones. After these operations, drainage is to be employed until the bile ceases to flow spontaneously through the wound, until complete subsidence of whatever degree of cholangitis existed.

18. The prognosis of operative intervention is not unfavorably influenced by the existence of pregnancy.

19. In persistent gall-bladder disease, trouble changes in the urine manifested by the presence of casts and albumen are not uncommon and are not necessarily a bar to operative interference.

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In a study of a series of one thousand deaths from diphtheria, Dr. Bernard W. Carey, Epidemiologist of the Massachusetts State Board of Health, found that there is an amazing laxity in securing early diagnosis and treatment, the fault of both parents and physician, the former because they do not realize the gravity of early symptoms, the latter because they do not always promptly or most efficiently apply their knowledge. It is a sad commentary on parental care that 11.8 per cent. were moribund at the physician's first visit. Physicians seemed frequently to have postponed administering antitoxin until a culture could be made, losing several vital hours; or they apparently hesitated to use it in sufficient amounts; and none took advantage of the intravenous method, which would have been advisable in those cases seen late in the disease. Diphtheria Antitoxin made by Eli Lilly & Company will be found highly potent always. In cases seen early, good practice has established the fact incontrovertibly that results depend absolutely upon its prompt and liberal use.

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**THIRD.**—That vaccination against Paratyphoid "B" likewise protects against that infection only.

**FOURTH.**—That vaccination against all three infections does definitely protect against all three.

**FIFTH.**—**That the protection** conferred **and the results of agglutination** tests, **are identically the same whether the individual is immunized against each organism separately** or **whether the vaccines are given in combination.**

**SIXTH.**—That the "Non-Specific-Reaction" of Typhoid vaccination is of no avail as a protection against the closely allied Paratyphoid infections.

Of course it is not always safe to reason from analogy. On the other hand is it not well to preserve the open mind and consider if there may not be merit in combinations of vaccines other than Typhoid-Paratyphoid, even though the immunizing response is less distinct and of shorter duration?

Paracelsus, Harvey, Jenner, Pasteur, all were men of "the open mind". They broke down the barriers set by authority in their times, and it seems to us a sad return to old traditions to insist that only those things which have the seal of official, or quasi-official, approval may ethically be included in the physician's armamentarium.

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